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Agriculture

**Forest
Service**

Southwestern
Region

Report No. 8

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Cultural Resources Management

Lookouts
In The Southwestern Region



Cover: Highland Park lookout tower and cabin on the Luna Ranger District of the Apache National Forest. The site was photographed by John D. Jones in 1923. FS Photo 177940

Published September 1989

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Peter L. Steer
Cultural & Environmental Systems
Tucson, Arizona

EDITOR'S FOREWORD

This book originated with a National Register nomination project undertaken in the Southwestern Region. The Archeologist for the Gila National Forest, Robert Schiowitz, suggested that a thematic approach to the lookouts would solve certain administrative problems. His suggestion was accepted and the Recreation and Engineering staffs in the Regional Office organized the project. Ralph Brown in Engineering and David Gillio in Recreation worked with Dolores Rottach, the Contracting Officer, to develop a Request for Proposal and specifications. A Contract, No. 40-8371-6-759, was ultimately awarded in 1986 to Cultural & Environmental Systems, Inc. of Tucson, Arizona.

The book consists of several disparate units which have been melded into a whole. Originally, the Evaluation Report and the nomination forms were produced by the contractor as separate "deliverables." Because of that, each document had its own bibliography and each had Figures numbered to fit the internal logic of the document. The evaluation report was written as one volume of text with a separate volume (an Appendix) containing all illustrations. The actual National Register nomination, of course, was prepared on the appropriate National Park Service forms.

It has been the Editor's task to eliminate the duplications and merge the documents, with some additional material, into a coherent whole. In doing this, there has been a conscious effort to preserve the original intent of the contractor's authors (Peter L. Steer and Keith L. Miller). Changes were made only to facilitate the reader's trip though the book. The "Forest Pioneer" material, for example, was added to allow better spacing of photographs and text, thus improving layouts.

An initial editing of the draft evaluation report was provided by a committee convened in the Regional Office. Members of that committee included Ken Boll, Teri Cleeland, Vearl Haynes, David Johnson, Dick Pellissier, Cindy Trechel, and David Gillio. A careful review by the committee eliminated some misunderstanding about Forest Service policy and procedures. The staffs of both the Arizona and New Mexico State Historic Preservation Officers (SHPOs) also reviewed drafts and made useful suggestions.

The evaluation report contained the larger number of photographs and drawings because it had to consider all properties which might fit under the thematic umbrella. The nomination then focused only on those properties which were still considered eligible for nomination once the evaluations had been accepted by the SHPOs. Figure numbering was further complicated by the fact that final illustrations for two Forests were not in hand at the time the contractors had to submit the evaluation report. In order to integrate the two major parts of this book, the Editor has largely preserved the Figure numbering scheme of the evaluation report but moved the illustrations from an Appendix. Now they are in locations close to first citation.

The pages of National Register material are reproduced here exactly as in the nomination. Citations to Figures in the nomination are printed here just as they were submitted to the Keeper, even though those Figures are not reproduced, as such, in this book. The drawings and photographs, duplicates of those in the evaluation report, are omitted. Neither USGS nor sketch maps are reproduced here because of cost considerations; but, full location information is given by geographic coordinates. The bibliography of the Evaluation Report is printed at the end of this volume. The nomination's bibliography, which would largely duplicate that of the Evaluation Report, has been deleted.

In addition to the material in the evaluation report and nomination, this book contains anecdotal material from the **Forest Pioneer**. These brief contemporary accounts help to give the flavor of the times when lookouts were in their heyday. Quotations from the **Forest Pioneer** appear in boxes to set them off from the original text. Also, in an Appendix, we have reproduced portions of an early Forest Service publication. It throws additional light on the structures and procedures common to lookout sites.

The field work upon which this study was based was a joint effort. Many individuals on the National Forests made special trips to each lookout site. They recorded their observations and made photographs. In some cases, they also gathered records which related events at the sites or changes to the physical condition of the property. The following people deserve our

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A-S - Louise M. Senior with Bruce R. Donaldson and Larry C. Lucas;

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Prescott - Robert Shields, Tony Sciacca, Greg Mosier, George Taylor and Karl McCormick;

Santa Fe - Tommy R. Fulgham;

Tonto - Fred Martin, Mike Skinner, J. S. Wood, Paul Stewart, J. Wayne Brasher, and Wilbur Belvado

In addition to the major efforts of Steer and Miller, important research work with original engineering records was done by Mary Lou Heuett of Cultural & Environmental Systems, Inc. Among those essential to production of this book are Dana Woodworth, Debbie Espinoza and Berlinda Gaddy. Under Woodworth's supervision, these ladies entered the evaluation report into the Data General computer. The files they created were then used to set type. Robert MacMahon ran the photographic laboratory for the lookout project and printed the majority of pictures seen in this book.

David "A" Gillio
Editor

INTRODUCTION

The purpose of this report is to provide an evaluation of the United States Forest Service (USFS) Southwestern Region fire lookouts and associated structures for possible inclusion in a thematic National Register nomination. In addition, this report will provide a foundation upon which a management plan can be developed to protect this unique cultural resource.

The properties in this thematic group comprise USFS fire lookout towers and associated support structures such as cabins, barns, storage sheds, privies, walls and cisterns built between 1905 and 1942 on National Forest System lands in the states of Arizona and New Mexico. The principal historical context to which all properties within this group relate is "fire detection in the Southwestern Region National Forests between 1905 and 1942." A second major historical context to which many of these properties relate is the federal work-relief programs organized through the Civilian Conservation Corps (CCC) in the Southwestern Region National Forests between 1933 and 1942. The properties also relate to a third historical context in a somewhat less direct manner; that of the history of public land management and the conservation movement in the United States between 1905 and 1942. Unified by these three interrelated historical contexts, fire lookouts and their support structures are distinguished by a singular planning function; that of fire detection, by several distinctive architectural expressions and by the USDA Forest Service itself.

The buildings, which represent the physical expression of Forest Service fire management planning at national and local levels, include several different types of lookout towers. Most of them were modeled after standard plans developed by the various Regional Offices of the USFS and a variety of support structures including cabins, barns, storage sheds, privies, walls, cisterns and corrals. All of the buildings are owned by the USDA Forest Service with title residing in the United States.

The general character of the buildings' setting is similar; generally high points in remote areas, usually mountain tops in the national forests of the Southwestern Region. These settings reflect the functional role of lookouts as observation points to detect forest fire.

Evaluation Criteria

In order to determine those lookouts or associated structures which might be eligible for inclusion in the thematic nomination to the National Register of Historic Places, a series of evaluation criteria was employed. The criteria are based on the National Register criteria of significance. Those lookouts or associated structures eligible for the thematic group nomination must:

1) be associated with events that have made a significant contribution to the broad patterns of our history (36 CFR 60.6(a));

2) embody the distinctive characteristics of a type, period or method of construction (36 CFR 60.4(c));

3) be fifty years old, or if under fifty years old, demonstrate exceptional significance.

Although fifty years is the generally accepted cutoff age for National Register eligibility, the era from 1933 to 1942 is viewed as a cohesive period. In fact, historians (Otis 1986; Paige 1985; Degler 1970; Salmond 1967; and Wirth 1980) have focused much attention in recent years on the Great Depression, the Roosevelt administration with its New Deal policies, and the many agencies created in this period to meet the social needs of the American people. The CCC, probably the best remembered and most successful of all New Deal programs, had a strong influence on USFS fire management policies by providing more personnel for fire crews and through the construction of new fire lookouts. Many of the fire lookouts described in this report were constructed by CCC crews between 1933 and 1942, when the CCC was terminated. Because of the strong association between the CCC and fire lookouts, it is felt that the fifty year cutoff for National Register nomination should be waived and the time period extended to 1942. The CCC represents an important historic context for the significance of many of the fire lookout facilities.

4) possess integrity from the historic period in which it was constructed. To be significant, the lookouts or associated structure must have integrity of location, design, setting,

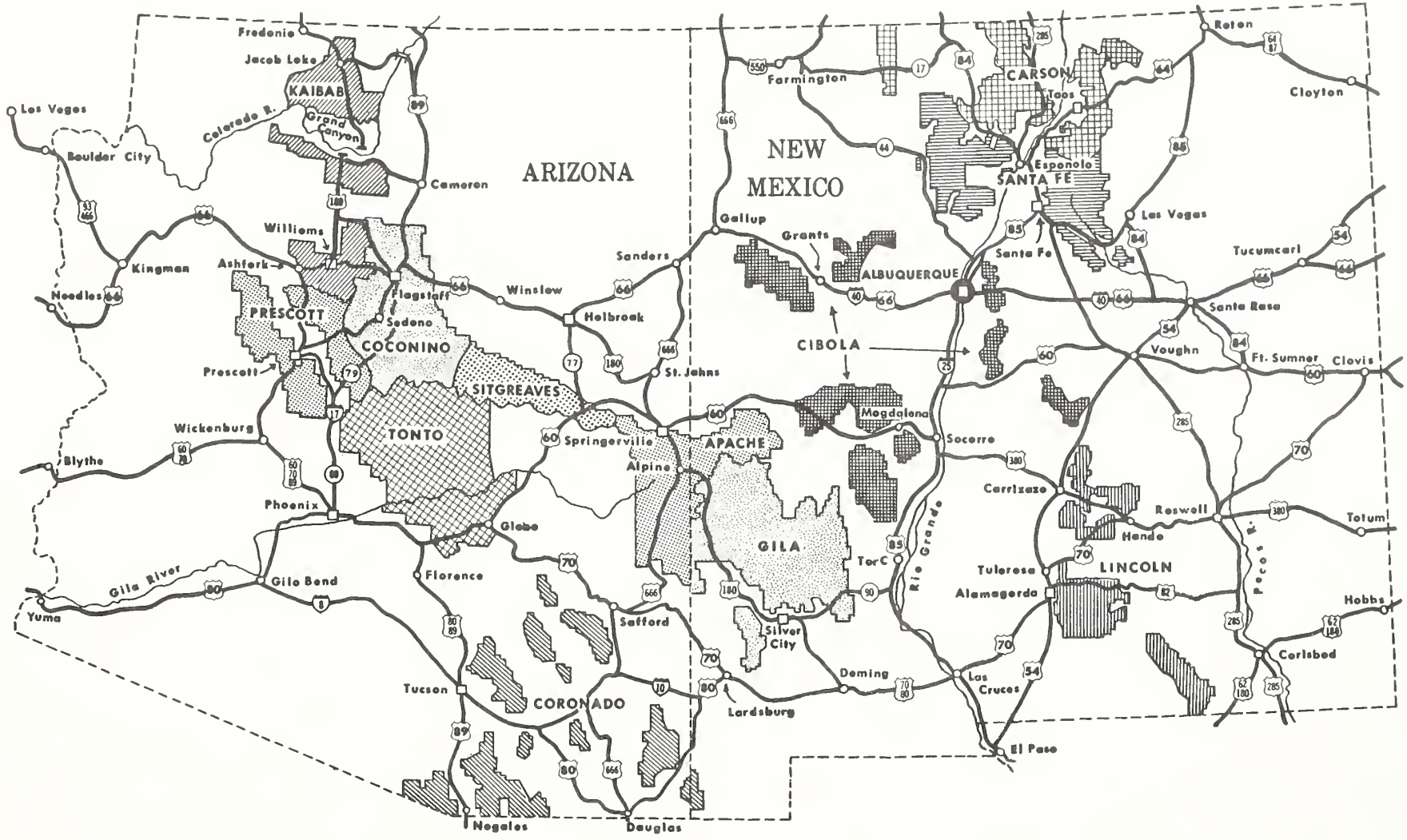


Figure 1. The National Forests of the Southwestern Region of the Forest Service. The Sitgreaves and the Apache are administered by a single Forest Supervisor in Arizona except for the New Mexico portion of the Apache which is administered by the Gila Supervisor.

materials, workmanship, feeling and association (36 CFR 60.4). This means that a lookout or associated structure must have experienced only minor modification since construction and, in most circumstances, they cannot have been moved from their original location.

All fire lookouts in the Southwestern Region of the Forest Service, regardless of construction type, have some significance in relation to the three historic contexts discussed earlier. The lookouts all appear to have been associated with events that have made a significant contribution to the broad patterns of our history and embody distinctive characteristics of a type, period or method of construction. Therefore, the evaluation criteria of age and integrity remain as the primary factors which can be utilized to distinguish between those fire lookouts which are considered eligible and those which are not.

Methodology

All of the fire lookout sites in the 12 National Forests in the Southwestern Region were inventoried and recorded in a comprehensive survey by Forest Service personnel. The survey was conducted in 1986 under the supervision of Dr. David Gillio, Archeologist in the Regional Office, USDA - Forest Service, Region 3, Albuquerque, New Mexico. [Samples of the field recording package are presented in Appendix A.] Cultural & Environmental Systems, Inc. (C&ES), was then awarded a contract to develop evaluation criteria and prepare an evaluation inventory report and a thematic National Register nomination. Figure 1 provides locational information about the National Forests of the Southwestern Region.

C&ES research started its part of the study with a two week visit to the USFS Regional Office in Albuquerque where copies of site forms and contact sheets of photographs from the survey were examined. The staff of the engineering department provided additional photographs and construction plans. All of this material was brought back to the C&ES office (Tucson, Arizona) for close examination and study. In addition, other researchers were contacted, both within the USFS and outside, who have an interest in fire lookouts. The Forest History Society in North Carolina and the history section of the USFS in Washington, D.C., were also contacted. The Government Documents Department of the University of Arizona Library was scoured for obscure publications regarding lookouts. Dr. Gillio had several data base searches done for this project that provided additional reference materials. Several archeologists working on various forests in the Southwestern Region provided materials from their offices. All of this material was carefully reviewed to provide as complete a picture as possible of the history of fire lookouts in the Southwestern Region.

For each lookout, the contractor examined recent photographs, a site form, and a set of photographs (in many cases, historic photographs) of the structure from USFS photographic mugbooks. The old photographs have been useful in detecting structural changes in the individual lookouts over time by comparing them with modern photographs. The local histories furnished for some individual Forests also proved useful in providing specific information.

CONTEXT

Environmental Setting and Fire Detection

Arizona and New Mexico represent one of the most varied topographic and scenic areas in North America. Contained within these two states there are six World Ecological Formations-classes (Desertscrub, Grasslands, Chaparral, Woodland, Forest and Tundra) and within this system are ten specific subcontinental North American Ecological Formations. They include Southwestern Desertscrub, Great Basin Desertscrub, Desert Grassland, Plains Grasslands, Mountain Grasslands, Evergreen Woodland, Chapparral, Deciduous Woodland, Coniferous Forest and Alpine Tundra (Lowe 1964). Many of these formations blend gradually with one another so that the distinction or demarcation between them is often obscured. Each of the formations is characterized by specific biotic communities and further distinguished by particular dominant floral and fuanal elements.

The combined factors of elevation and associated precipitation create the gradient responsible for the sequence of biotic communities and life zones. Precipitation in the area encompassed by Arizona and New Mexico occurs in a reasonably predictable biseasonal regime of summer and winter rains. Summer precipitation, usually beginning in late June and continuing through the end of August, occurs in the form of extremely localized and violent thunderstorms of relatively short duration. These rains result from tropical Atlantic (Gulf) air masses which bring large quantities of moist tropical air into the region. Winter rains are usually of a gentle, widespread and often prolonged character. They are carried into the area from the west and northwest on the strong westerlies created by the winter pattern of the jet stream and its action on the atmosphere over the northwest Pacific area.

Despite these patterns of precipitation, the environment of this region is typified by predominantly arid conditions, the degree of which can fluctuate markedly seasonally or year-to-year. Between the biseasonal rains, droughts can occur which often extend into what normally should be a rainy period. The combination of an extended drought and the localized and violent thunderstorms of middle to late summer can have dangerous results. In the more upland areas, particularly the Mogollon Rim country of the Colorado Plateau, occur the largest concentration of lightning fires and the highest frequency of critical fire weather in the United States (Biddison 1977-1978:19-21).

Climatic factors are critical in the understanding and prevention of fire. Also a key factor is the occurrence of specific vegetation across and within environmental zones. In his discussion of fire regimes in Arizona, Humphrey (1964:56-60) describes the key fuel as being grass, a major component of many of the biotic zones. For instance, the relationship between desert and grassland is determined largely by the ability of grassy vegetation to carry fire. When drought retards the grassland growth, desert vegetation encroaches; but in times of increased rainfall, grasslands expand - often through the agency of fire.

Prior to the introduction of cattle and other European cultural items in the Southwest, fire probably helped to maintain healthy biotic communities. For example, in 1973, the Tall Timbers Research Station (Biswell 1973, 1-3) identified a natural preserve of ponderosa pine on the San Carlos Apache Reservation that had not been subject to a strict fire protection program. The broadcast fire patterns identified there were felt to represent an ideal example for ponderosa pine management; in other words, no management at all.

Pyne (1982:510-520) feels that the relationship between the grasslands, pine forest, livestock and broadcast fire patterns of the Apache Indians in historic times is a critical factor in understanding fire history in the Southwest.

Livestock was introduced into the Southwest by the Spanish in the seventeenth century and reached such overwhelming numbers in the centuries which followed that severe overgrazing occurred in many areas. Leopold (1949:137-140) observed that overgrazing had severely altered the landscape of the Southwest and attributed it partially to the lack of fire. Overgrazing had drastically reduced the basic fuel that allowed fire to spread and which had played an important role in the regeneration of grasses. The Southwestern Region reflects a vegetative and cultural mosaic that exhibits a variety of fire regimes (Pyne 1982:515-516), many of which are not beneficial. Natural and cultural factors appear to have played an important role in

changing the landscape of the region and its fire history.

Fire Detection in the Southwestern Region

In 1891, partially in response to the activities of the American Conservation Movement, the United States Congress passed the General Land Law Revision Act which enabled the President to designate and set aside certain specified areas of forested public lands as Reserves. [Amendment 24 is usually referred to informally as the Forest Reserve Act.] The first reserve created under this Act was the Yellowstone Reserve in Wyoming. In the Southwestern Region, the Pecos River Forest Reserve was established in 1892, followed by others including:

1893	Grand Canyon Forest Reserve
1989	Black Mesa Forest Reserve
	Prescott Forest Reserve
	San Francisco Mountain Forest Reserve
1902	Santa Rita Forest Reserve
	Santa Catalina Forest Reserve
	Chiricahua Forest Reserve
	Lincoln Forest Reserve
1905	Tonto Forest Reserve
	Jemez Forest Reserve
	Portales Forest Reserve
1906	Gallinas Forest Reserve
	Manzano Forest Reserve
	Magdalena Forest Reserve
	San Mateo Forest Reserve
	Mount Taylor Forest Reserve
1906	Baboquivari Forest Reserve
	Huachuca Forest Reserve
	Tumacacori Forest Reserve
	Peloncillo Forest Reserve
	Taos Forest Reserve
1907	Big Burros Forest Reserve
	Verde Forest Reserve

In February 1905, Secretary of Agriculture James Wilson issued a directive that announced the transfer of the Forest Reserves, then under the supervision of the Government Land Office in the Department of the Interior, to the Department of Agriculture. Forestry would be in Division R, soon to be renamed the United States Forest Service (USFS). This was to have a profound effect on the people of Arizona and New Mexico. It concluded a series of events begun under Franklin Hough in 1873, continued by Bernhard Fernow in the 1880s and 1890s, and ended by the efforts of Gifford Pinchot and President Theodore Roosevelt after the turn of the century to preserve and protect the forest lands of the United States. The growth of the American Conservation Movement (discussed below) was to continue and often take different paths from the policies of the USFS, but the Transfer Act in 1905 represented an important milestone in the development of the USFS.

Because of the Transfer Act, twenty million acres of public lands in Arizona and New Mexico were to be administered from a District Office of the United States Forest Service. The Service would be headed in Washington, D.C. by a leader of the American Conservation Movement and one of America's most able civil administrators, Gifford Pinchot. The policies of the Forest Service had a firm base in professional forestry which had been established during the previous twenty years by America's first professional forester, Bernhard Fernow. Gifford Pinchot and his small group of student assistants, men such as Henry Graves, William Greeley and Ferdinand Silcox, were to refine and elaborate on a comprehensive system of management for the nation's forest resources. One of their major concerns would be the control of wildfire on USFS lands.

In 1908, Chief Forester Gifford Pinchot appointed Arthur Ringland to be the first District Forester for the Southwestern District (later to be renamed Southwestern Region). The Forest Service was mandated to preserve the forest lands while allowing for their economic and recreational use. The Organic Administration Act of 1897 reflected the dual concern of Congress for not only the protection of federally administered forests but also the agricultural, timber, mining and livestock interests that were economically dependent on the resources of forest lands.

Although range management has been a major focus of the USFS in the Southwestern Region, forest fire control and prevention also have been critical concerns. The earliest foresters in the Region believed fire to be the preeminent threat to the forest resources (Tucker & Fitzpatrick 1972:49-59). In the initial inventories of the newly created forests, evidence of past forest fire damage was clearly evident. In the late seventeenth century, a fire in the San Francisco Mountains area burned over 18,000 acres (Leiberg et al. 1904:26-27). In the 1880s, forest fires near Santa Fe burned for weeks (Tucker and Fitzpatrick 1972:49). Lang and Stewart (1909:17-19) reported extensive fire damage on

the Kaibab Forest Reserve, stating:

> vast denuded areas, charred stubs and fallen trunks and the general prevalence of blackened poles seems to indicate their frequency and severity long before this country was explored by white men.

During his inventory of the Grand Canyon Division of the Tusayan National Forest, Allison (1910:14-15) reported little evidence of fire damage, but in the Carson National Forest, Loveridge (1921:11) noted extensive damage in the Douglas fir stands.

In 1922, the management plan for the Mount Graham Division of the Crook National Forest in Arizona noted that ground fires and grazing were highly destructive of seedlings and prevented regeneration. The USFS recognized early on that recently logged areas were high hazard zones for fire (Baker et al., 1986:183-184). [Note: Baker et al., cited here in manuscript version, was subsequently (1988) published. Copies are available from the Regional Office at no charge.]

Leopold (1923), in a report on the forest conditions on the Santa Fe National Forest, felt that the damage from grazing was more extensive than that from fire. He believed that damage from grazing since white settlement far exceeded any evidence of prehistoric fire episodes. Both grazing and fire contributed to the deterioration of the forests in the Southwest.

Before the forests of the Southwest came under the administration of the USFS in 1905, there was no systematic approach to fire control. Fire control consisted largely of patrols by rangers on horseback. For instance, in 1903, Tom Stewart started work as a ranger on the Pecos Forest Reserve. On his first patrol he rode to the top of the mountains and observed two smokes from fires (Tucker and Fitzpatrick 1972:49). During their patrols on the forests of the Southwest, rangers were to locate many mountain top sites for observation that would later be utilized for fire lookout structures.

The instructions given new rangers included patrolling the district and watching for smokes. The first Forest Service Use Book (Secretary of Agriculture 1905:65) stated:

> Officers of the Forest Service, especially forest rangers, have no duty more important than protecting the reserves from forest fires.

In 1908 the initial systematic fire control program for the Southwestern Region was prepared by Arthur Ringland, the first District Forester (Tucker and Fitzpatrick 1972:59-61). He suggested that a study of forest conditions and the development of a fire plan were necessary on all forests. He specifically recommended telephone lines to connect the lookouts to the ranger stations.

It appears that Ringland's suggestions were followed on several forests. On the Santa Catalina Forest, Stanley Wilson constructed a log fire lookout on Mount Bigelow in 1909. On the Datil Mountain Forest, Supervisor W. F. Goddard asked his forester to develop a fire plan for the districts (Baker et al. 1986:189).

Many events and developments outside of the Southwestern Region were to have a profound influence on fire management in Region 3. The disastrous fires of 1910 in the Northwest shocked the nation and were in large part responsible for the passage of the Weeks Act in 1911. The Act provided increased funding for fire control, state cooperative fire protection programs and research activities. New Mexico would join the state cooperative program in 1928, while Arizona, would be the last state to join, in 1974 (USDA Annual Reports, 1928 and 1974). In 1926, Congress passed the Clarke-McNary Act which supplanted the Weeks Act and greatly expanded federal assistance to the states for fire control programs. During the early years of these laws, a large portion of the financial assistance to the states was used to pay the wages of seasonal fire guards and lookout observers. These two laws would provide the basis of federal financial support for the next fifty years.

The use of fixed lookout points originated around the turn of the century and quickly expanded. The earliest form of lookout was simply a flat map board mounted to a post on top of a mountain with good visibility. From this point the early fire guard would spot a fire and then chase it down. Another early form of lookout was a platform mounted in a tree with slats or spikes nailed to the side of the tree to facilitate climbing. These early lookouts were used primarily by fire guards on patrol as observation points on their designated routes.

Over time, lookouts were changed to permanent stations with telephone links to the ranger station. Most of the early lookouts were built with locally available materials, usually logs. The steel tower, the treated timber tower and the concrete block tower came later along with the development of standardized plans for the lookouts.

Zimmerman (1969:5-6) reported that the USFS and state forestry departments had constructed a total of 5,060 lookout towers across the country by 1953. He noted a steady decrease since that time. His 1967 count indicated that, of the towers recorded in 1953, thirty percent were gone. This was partially due to the increased reliance by the USFS on aerial patrols for detection. In the Southwestern Region the pattern seems to vary with the national trend, and the construction dates of the remaining lookouts reflect this pattern:

Construction Year	Surviving Towers
1909	2
1917	1
1920s	12
1930s	47
1940s	4
1950s	17
1960s	14
1970s	1
1980s	2

It should be noted, however, that lookouts constructed during the 1950s and 1960s were largely replacements for those built in the 1930s by the CCC.

During his first years as Chief Forester, Pinchot authorized a series of studies on the history of forest fires in order to better understand the dangers of wildfire. He also authorized field investigations of fire control. These studies were to develop into a highly sophisticated analyses of fuel, combustion and weather (Steen 1976:135-136). Region 5 (California) was to provide the early leadership in conducting many of these studies.

From 1911 to 1914, Coert duBois had been conducting research on the problems of fire control in Region 5. His comprehensive study was the first to address fire control in a systematic and scientific manner (duBois 1914) and was to serve as a model for fire control programs in the rest of the national forests (Thornton 1986:15). In the fire detection section of the report he presented a standardized plan for a 12 feet by 12 feet, wood live-in lookout cab. He also endorsed the Aermotor Company's steel observation towers for use on the national forests.

In 1911 to 1912, Chief Forester Henry Graves authorized S. B. Show to begin fire studies in Region 5. Show initiated his study with the Red River Lumber Company near Westwood, California (Steen 1976:135). Detection became a major subject of interest and the research culminated in two major studies (Show and Kotok 1937; Show et al. 1937) that refined detection plans and were to be influential in the design of lookout systems in all parts of the country.

Much of the detection research focused on visibility and mapping of areas around existing or proposed lookout facilities. Sensitivity maps were made to correlate with fire occurrence zone maps to assist in determining the effectiveness of given lookout points.

In the early 1930s, Show formed a research group at the California Forest and Range Experiment Station (now the Pacific Southwest Forest and Range Experiment Station) that studied every aspect of fire including detection. The research group studied and published their findings on a variety of topics including lookout structure design, visibility patterns, lookout site designations (e.g., primary, secondary), and psychological factors which affect lookout observers. Show (Show and Kotok 1937; Show et al. 1937) consistently recommended construction of additional lookouts to insure complete coverage. More often than not, however, individual forest budgets would not permit the development of the elaborate detection system which would have included the additional lookouts that Show advocated.

Between 1919 and 1923, Aldo Leopold, Assistant District Forester, conducted an inspection tour of all the national forests in Region 3. His reports (Leopold 1919-1923, 1924) noted that while most of the lookouts were in good condition, there was no systematic plan for their location. He also expressed doubt as to whether they were all needed. This may have been a reflection of his philosophy concerning the ecological role of fire.

The most active period for lookout construction in the Southwest and the rest of the nation was the 1930s. The economic disaster of the Depression affected the Forest Service and lookout detection facilities in a surprisingly beneficial and significant way. Many of the recommendations of the California based research group were executed during this period. The creation of the CCC in 1933 (this topic is discussed in detail under a separate heading) provided the necessary manpower to carry out many of the construction plans recommended by Show's research group.

The report prepared by the Loveridge-Cliff Inspection Group (organized to evaluate fire control procedures across the nation) in 1945, noted the good record of fire control in the Southwestern Region and devoted much of its discussion to grazing problems (Loveridge-Cliff Report 1945). However, the report did note the poor condition of many lookouts in the region and recommended improved maintenance or replacement. It appears that this was carried out in the 1950s and 1960s, when the USFS undertook the Increased Manning Experiment (Thornton 1986:20) and 31 new lookouts were constructed, often replacing earlier ones which were torn down. This was somewhat reminiscent of the 1930s when new CCC constructed lookout towers replaced many of the earlier wooden ones.

During the 1950s and 1960s, regional fire plans called for the quick suppression of all fires. Each forest in the Southwestern Region had its own particular problems. For instance, the Lincoln National Forest has over 150,000 acres of patented lands and many vacation homes that were seen to increase fire danger. The influx of larger numbers of people from Tucson into the Santa Rita and Santa Catalina mountains of the Coronado National Forest for recreation caused several inspectors to advise establishment of additional detection stations (Baker et al. 1986:202). The rugged terrain of the Santa Fe National Forest creates blind spots for fixed detection; thus more reliance on aerial patrols was required (Baker et al. 1986:202).

The 1967 Regional Management Plan marked a change in the region's fire policy (Baker et al. 1986:203). The existing philosophy of fire suppression was challenged in an article by Collins (1967). The emphasis on total suppression was changed to one of control. In recent years the Forest Service has focused on the development of alternate means of detection and more efficient means of fire suppression.

The decline in fire lookouts has been attributed to a number of factors (Thornton 1986:20-21):

1) More fire reports coming in from the public than from lookouts.
2) The effectiveness of aerial patrols.
3) Better transportation routes and equipment.
4) Radio repeaters and improved communication methods.
5) Smog, rendering many low elevation sites useless.
6) Inflation in operation and maintenance costs.
7) Fixed point detection with automated devices: Automatic Lightning Detection System (ALDS), satellites and ground optics.
8) Changes in fire policies that permit monitoring and management of some wildfires.
9) USFS concern over liability risk which has resulted in the demolition of some unstaffed lookouts.

A final important factor which is not mentioned by Thornton should be included:
10) Wilderness designations. In a newly designated wilderness, some towers were perceived as nonconforming structures and were removed.

While some of these points are more specific to Region 5, a number of them do have relevance in explaining the decline in lookouts in the Southwestern Region.

The Civilian Conservation Corps

The Great Depression was a severe crisis for America affecting its economic, social and political organization. Unemployment and dislocation of families were common and industry was disrupted. Over two million people were forced into a vagrant existence. Unemployment affected young people with the most severity.

At the same time, the nation was becoming conscious of the serious problems of poor usage and exploitation of its national resources. Land use ethics (or more correctly, the lack of) had been largely governed by economic self-interest that resulted in eroded and exhausted soils, overgrazed grasslands and stripped forests. The loss of tree and grass cover threatened to accelerate erosion.

The CCC provided solutions to both these problems

by employing young men in work which focused on protecting national resources. The CCC involved the efforts of many governmental agencies and provided employment for thousands of young men. It was organized specifically to provide employment and deal with national conservation needs. In some circles, the CCC was labeled "Roosevelt's Tree Army." While forest planting was a major activity, CCC works included recreational development, soil conservation, aid to grazing and wildlife, flood control, reclamation and conservation of our national and state forests. The establishment of the CCC made available to federal, state and local governmental agencies for the first time an adequate supply of labor to carry out many of the conservation projects which had been planned but never executed due to a lack of labor and funds.

The CCC remains the best known and most successful of the New Deal programs initiated by the Roosevelt administration during the 1930s.

The CCC was established in April of 1933 and terminated in 1942. This agency accomplished its goals of removing people from the welfare lines and putting them back to work as well as achieving many conservation goals. While other federal agencies, such as the National Park Service and the Soil Conservation Service, utilized CCC crews, nearly half of the public works projects were administered by the USFS. The USFS controlled most of the camps allocated to the Department of Agriculture.

On the national forests, the CCC helped to educate the public on preventing forest fires and provided a large labor pool for fire crews to locate and extinguish forest fires. Across the nation, the CCC built 3,470 fire towers and houses for the detection of forest fires, laid 65,000 miles of telephone lines to provide a communication system linking the lookouts to the ranger stations and constructed over 90,000 miles of roads (Lacy 1976:140).

During the CCC period, the Southwestern Region contained 14 national forests, including the Coronado, Coconino, Crook, Kaibab, Prescott, Sitgreaves, Tonto and Tusayan in Arizona. In New Mexico there were the Carson, Cibola, Gila, Lincoln and Santa Fe. The Apache National Forest had lands in both states.

Initial plans called for camps in Arizona and New Mexico with an enrollment of 8,650 men (Otis et al. 1986:29). Thirty-seven camps were opened. The Sitgreaves, Tonto, Carson and Lincoln National Forests had two camps each. The Crook, Prescott, Cibola and Gila National Forests had three camps each while the Coronado, Santa Fe and Apache National Forests had four camps each. The Coconino National Forest had five camps (Otis 1986:29). An average of 20 camps continued operating in the Southwestern Region until the CCC was disbanded in 1942.

Administered as part of Army Corps Area 8, the enrollees went to Fort Bliss in El Paso, Texas, and later to Fort Huachuca, Arizona, for conditioning and training programs. Several organizational changes occurred during the early period and eventually five districts were established: Phoenix, Tucson, Albuquerque, Silver City and Fort Bliss. Nearly 12,000 men went through the camps of the Southwestern Region.

The location of camps was dictated by the need to have access to reliable water sources. The earliest camps were established at Treasure Peak on the Coronado National Forest and at Pinal Mountain on the Crook National Forest (now the Tonto). One of the first structures built by enrollees at the Pinal Mountain camp was a lookout tower on Signal Peak.

The Forest Service established many small side camps that allowed enrollees to be located closer to large projects. These smaller camps also were easier to supply with water. Work projects at the side camps included erosion control, rodent control, timber stand thinning, fencing of forest boundaries and range allotments. Campgrounds and recreation sites were constructed and there was building of trails, roads, bridges, telephone lines and fire lookouts. By the fall of 1933, fire lookouts had been constructed on Escudilla Peak on the Apache National Forest and Signal Peak and Webb Peak on the Crook (now Tonto) National Forest. The exact number of lookouts and support structures built by the CCC in the Southwestern Region is not clear from the available records. Of those sites that could be documented, at least 31 lookout towers and 25 associated structures were constructed by the CCC, twenty of which are included as part of the thematic nomination.

CCC projects that involved range management, reforestation, water development and ranger stations often have received greatest attention. However, important contributions were made by the

CCC in improving the fire management capabilities of the Forest Service in the Southwestern Region. This was done through the construction of fire lookout facilities and related trails, roads and telephone lines. The USFS also became dependent on CCC labor for fire fighting crews.

The USFS fire lookouts and their support outbuildings represent a theme of the federal response to the Depression, as CCC accomplishments that enabled the USFS to develop a more systematic and effective fire detection capability. Another important association of these structures and the CCC is related to the benefits of the program provided to communities in Arizona and New Mexico through employment of local residents and financial relief to their families and communities.

Public Land Management and the Conservation Movement

Throughout the first century of United States history, the policy was established for the government to administer public lands in order to increase settlement, promote ownership of homes and develop resources for business and individual initiative. The individuals and businesses that entered the frontier areas created conditions which required regulation. Resources of all sorts, particularly the forests, were ruthlessly exploited with no thought for future needs or generations. The sentiment was summed up aptly in the words of Senator Teller of Colorado in 1909 who said:

> I do not believe there is either a moral or any other claim upon me to postpone the use of what nature has given me, so that the next generation or generations yet unborn may have an opportunity to get what I myself ought to get (Teller 1909).

For the first 75 years of our national history, there was little effort on the part of the government to regulate entry or control exploitation of resources on public lands. Men could enter lands, clear them by any method they chose and acquire ownership by occupation. This system resulted in conflicting claims and the stripping of valuable resources such as lumber or minerals. Lack of accurate surveys and orderly methods of title acquisition discouraged many from settling in the frontier area. To remedy these and other disadvantages in the prevailing system of free entry, and to encourage more rapid western development, the Congress passed the Homestead Act. The law permitted citizens to enter on a quarter section of land (160 acres), after it had been surveyed, for a cost of $1.25 per acre.

Under this Act, thousands of homesteads were filed in the western states. Due to misuse of entry laws, Arizona and other western states suffered considerable exploitation of their forests as a result of this Act.

In 1877, it was evident that the provisions made in the Homestead Act of 1862 for 160 acre homesteads were not satisfactory or proper for arid, semi-desert lands requiring irrigation before becoming productive. On 3 March 1877, Congress passed the Desert Land Act which permitted 640 acre entries on desert lands with the provision that water systems would be developed to grow crops within three years. It was not the intention of this Act to permit the filing of claims on timbered lands, but the records indicate infractions of this sort occurred. The worst result was the segregation of valuable grazing lands from independent water supplies.

However, the abuses to forest and grasslands under the Homestead and Desert Land Acts were insignificant in comparison to those that occurred under the Timber and Stone Act passed by Congress in 1878. This Act authorized citizens to fell and remove timber from the public domain for mining and domestic purposes. It also allowed the purchase of public lands for $2.50 per acre for timber and stone use. The motive was to prevent illegal cutting, a common practice at the time, and to provide for the needs of the settlers. The real result of the Act was that there was no way by which timber alone could be secured for commercial purposes in an honest manner. The inevitable outcome was fraud by which large timber companies secured lands on a massive scale. The Commissioner of the General Land Office wrote in 1882:

> ... depredations upon the public timber by powerful corporations, wealthy mill owners and lumber companies are all being committed to an alarming extent.

The motives for passing the Timber and Stone Act were to give the settler, in addition to his 160 acres of land, lands to supply timber for his domestic use. Unfortunately, the abuses of its

provisions were serious and frequent.

Lumber companies took advantage of timber and stone entries to acquire timberlands for their cutting operations. In Arizona, the Commissioner of the Land Office reported in 1901 that the Old Dominion Copper Mining and Smelting Company cut in excess of four million board feet of lumber in 1900 to 1901 from non-mineral lands. Abuses also occurred by the stockmen who managed to acquire, under the guise of this law, vast tracts of land for grazing. The Act was finally amended in 1891 but abuses continued which resulted in the concentration of timber ownership in the hands of speculators and large companies.

During the 1870s, the conservation movement came into being in response to timber depredations of public lands. Scientists and other educated men began to question the unrestricted use of natural resources on public lands and expressed their concern for the preservation of future supplies. In 1864, George Perkins Marsh published his important book, Man and Nature, which warned of environmental abuses and discussed the ethics of land use. Shortly after, the Annual Reports of the Department of Agriculture and Interior made reference to Marsh.

At this same time, the states also began to develop concerns for the protection of their public lands. Although early efforts focused more on the protection of commerce and transportation; forest fires, forestation and trespass by timber companies began to receive rudimentary forms of regulation. For instance, in 1885 California created a Forest Board chartered to educate and conduct research but which had no powers to enforce regulation.

In the fall of 1875, the American Forestry Association was organized and held its first meeting in Chicago. The members agreed on the need for extensive research into the problems in timberlands. One of the delegates at this meeting who assumed a leadership role was Dr. Franklin Hough of New York.

In 1873, Dr. Hough presented a paper at the annual meeting of the American Association for the Advancement of Science in Portland, Maine. He summarized his own forest research in New York and argued for the need for management and preservation of the nation's timberlands. The American Association for the Advancement of Science endorsed his report and sent a memorandum to Congress urging that they organize and fund a study of the conditions of the nation's forests.

Several months later, Hough and Harvard botanist George B. Emerson traveled to Washington, D.C. where they met with Joseph Henry of the Smithsonian Institution and the Commissioner of Agriculture, Frederick Watts. A meeting with President Ulysses S. Grant followed. Over the next three years, the idea of a forestry study moved back and forth in Congress. In 1876, Congress authorized funding and instructed the Department of Agriculture to create a position for a forestry agent to direct the study. Hough was chosen and within a year issued the first in a series of reports that were to analyze forest problems and emphasize the need for the development of a management policy to protect and preserve the forests. His reports had a strong influence on other government leaders. Secretary of the Interior Carl Schurz worried about continued exploitation of timber resources on public lands.

In 1881, the Division of Forestry was established in the Department of Agriculture and Hough was named its first head. Political problems ensued and Hough remained as head of the agency for less than two years. During that time, however, he managed to generate influential reports and he traveled to Europe to study professional forestry methods. His successor, Nathaniel Egleston, was ineffective. In 1886, Egleston was succeeded by the first professional forester to be employed by the federal government, Bernhard E. Fernow.

Trained in Europe, Fernow had held a German Forestry license since 1869 and, after arriving in the United States, he worked as a consultant in Pennsylvania. Shortly after taking office, Fernow received more power to implement policies when Congress gave full statutory recognition to the Forestry Division in the Department of Agriculture. Reports continued to pour into Washington from the western states documenting numerous cases of land fraud in securing timber lands. Fernow drafted the first enforcement bill. Although Congress did not pass it, it did prove to be a strong basis for later legislation.

Fernow strongly promoted the idea of establishing forest reserves and managing them through modern forestry techniques. He often spoke of the problems of forest fires and the need for more effective detection and suppression efforts. Fernow's efforts, in coordination with others in

the Departments of the Interior and Agriculture, resulted in the passage of the Forest Reserve Act in 1891 (as an amendment to revising land laws). Seventeen forest reserves were created in three years by President Harrison and placed under the Supervision of the Department of the Interior.

In 1897, a bill was passed by Congress that provided for the management of Forest Reserves. Fernow left office after political disputes in 1898 and went on to establish a forestry school at Cornell and became its first director. In 1907, he left to head the forestry school at the University of Toronto and continued to influence American forestry, until 1923, through his position as editor of the Journal of Forestry. He published over 250 articles and an important book, Economics of Forestry (1902), that argued for modern forestry practices. Fernow made important contributions in education and the development of modern forestry techniques.

Ralph Bryant, forestry professor at Yale wrote to Fernow shortly before his death:

> No other man has been such a potent force in the advancement of forestry in this country and the wonderful foundation will always endure (Steen 1976:46).

Fernow's successor as Chief of the Division of Forestry was Gifford Pinchot who had studied forestry at Yale and after graduation went to Europe to study forestry practices. Returning to the United States in 1892, Pinchot was asked by Fernow to become his assistant. He declined and took a position managing the private forests of George Vanderbilt's Biltmore Estate near Asheville, North Carolina. He also developed forestry management plans for New York state during which time he made the acquaintance of Theodore Roosevelt. In 1897, he became involved with plans to create a forestry commission at the National Academy of Sciences. In 1892, during western travels for this commission, he became acquainted with John Muir, founder of the Sierra Club.

After his appointment, Pinchot argued strongly for the permanent tenure of forest land, continuous management, and employment of professional foresters. Pinchot began his efforts to have the management of the Forest Reserves moved from the Department of the Interior to the Department of Agriculture. He began cooperative research programs and developed plans for increased forestation and fire protection. One of Pinchot's earliest and strongest emphases was on fire protection.

Pinchot fostered cooperation with the Department of the Interior and, by 1901, the Agriculture Department was largely responsible for research and technical management decisions. During this period many technical reports and manuals were prepared. Some provided the ground work for fire protection studies of the next decade which advocated the development of systematic detection systems to provide early warning of fire so a quick suppression effort could follow.

Pinchot also developed the program of using student assistants which was to provide future USFS leadership for many decades to come. Arthur Ringland, first supervisor of the Southwest District, began his career as a student assistant to Pinchot in 1900. DuBois and Show, who were to conduct extensive research on fire detection systems in the coming decades, also started as student assistants.

In 1901, the Forestry Division was elevated to the status of Bureau and, in 1905, President Roosevelt transferred the forest reserves to the Bureau of Forestry in the Department of Agriculture. Pinchot soon changed the name to Forest Service and became its first Chief. Two years later the reserves were renamed "National Forests."

Pinchot began to develop a policy for the operation of the USFS and management of the national forests. The first Use Book was published late in 1905 emphasizing the strong need for protection of the national forests from fire. Pinchot directed duBois and Show to start research on the development of fire management plans which were to include recommendations for improved detection facilities through the construction of permanent fire lookouts.

Pinchot's contributions to the development of conservation philosophy were substantial. He strongly advocated that responsible, regulated use of the national forests was compatible with conservation.

The two major threats to national forests were timber depredation and fire. The inspiration that spurred the development of the conservation movement was the exploitation of timber resources on public lands by large private companies. The

key to eliminating these depredations and developing sound management plans included fire protection strategies (i.e., rapid detection of fires from lookout posts). It is in this sense that the fire lookouts evaluated here are the historic physical reminders of the methods utilized to protect the National Forests, a major goal initiated through those men and women involved in the conservation movement.

A Functionally Specific Architectural Style:

In assessing the historical significance of a lookout tower, it is necessary to identify and compare individual types. Fire lookouts represent a single thematic group with a wide range of architectural designs. Thornton (1986:24-25) identifies and defines seven broad categories that include lookouts and associated structures:

1) **Observation only lookout.** In this category, the fire-finder only is present in the work area and the lookout operator lives elsewhere. The majority in the Southwestern Region are metal Aermotor towers measuring 7 feet by 7 feet (one wood tower measures 7 feet by 7 feet), while a few are larger, measuring 12 feet by 12 feet.

2) **Live-in lookout.** This category has the fire-finder located in the lookout operator's living quarters. It includes a variety of types: 14 feet by 14 feet Aermoter towers, blockhouse, L-4 houses, R-6 flats (CL-100-106 series) and CT-2 towers.

3) **Cupola.** For this category, a small cupola observatory structure containing the fire-finder was built on top of another structure to serve as a lookout. The first USFS standard plan was a D-6 cupola designed by Lige Coalman and in 1915 the prototype was placed on top of Mt. Hood in Oregon. It sat on top of a 12 feet by 12 feet house. The D-1 cupola designed by D. L. Beatty in the Flathead National Forest in Montana sat on top of a 14 feet square log cabin (Kresek 1985:11-12). Although several D-1 and D-6 cupolas were constructed on mountain tops in the Southwestern Region, none have survived.

4) **Secondary.** In this category, the fire-finder was located in a building with restricted visibility but which was designed to cover blind spots of other lookouts. Although none of these types now exist in the Southwestern Region, review of old photographs suggests that in the 1920s and early 1930s some lookouts did exist that fit this description. They generally appear to have been a square or rectangular shed with an observation window on only one side.

5) **Dwellings.** This category is used to include all other buildings associated with lookout towers, including living quarters (cabin or frame buildings), barns, sheds, storage facilities and outhouses.

6) **Portable.** In the early days of the Forest Service in the Southwestern Region, this category included tents. Today it includes only portable trailers of which there is only one example. It is now located on the Santa Fe National Forest in New Mexico.

7) **Unclassified.** This category includes examples of lookouts placed on top of structures built for other purposes.

An alternative classification system groups the lookouts by fire plan designation:

Primary: Continuous seasonal use.

Secondary: Continuous seasonal use only in times of high fire danger.

Emergency: Staffed only in times of high fire danger.

Project: Used for watching a specific project, such as construction activity, that may generate fire danger to a forest.

The majority of lookouts in the Southwestern Region fit into the primary and secondary categories. The archival materials reviewed for this classification group were fragmentary and unclear as to the structures involved.

These general categories are presented as a preliminary classification only for general information. The specific design types provide the means by which historical and architectural significance can be judged.

As Thornton (1986:25) suggests, fire lookout structures reflect architectural design concepts that occurred long before the development of organized fire detection systems. For example, residential homes and public buildings in colonial America utilized cupolas. Towers date to biblical times, and in the past two centuries

various industries (farming and ranching), military forts and cities designed and built a variety of towers for observational and other uses.

From an engineering standpoint, fire lookouts are relatively simple structures and have undergone few innovations over the years. The variety of types that were in existence at one time or another reflected individual innovation in the early days of the USFS. However, in later decades, systematic experimentation helped to achieve standardization. Lookouts also reflect, to a certain degree, the availability of local building materials and what could be reasonably transported to the proposed construction site.

The earliest lookout points were simply convenient mountaintop locations with good visibility which could be visited by fire patrolmen (Figures 2 and 3) on their assigned routes. The first type of fire detection devices constructed at some of these sites was a simple alidade and protractor placed on a tree stump, post or rock so a precise bearing could be obtained (Figures 4 - 8). Judging from photographic evidence, some of these temporary locations were utilized into the early 1930s, and later became the sites of permanent lookout structures.

At about the same time (ca. 1905 - 1920), lookout trees appear in use. In areas lacking a clear mountain top to set up a protractor and alidade, a lookout tree was utilized. A tall tree was selected that would afford a good view and the top of the tree was modified to support a crude platform. Access was provided by spikes [or lag bolts; hence the term "lag tree"] driven into the side of the tree or by wooden ladders. Usually not permanently manned, lookout trees were probably utilized most commonly by the fire patrolman as he made his rounds of the district.

While only early lookout trees are represented in Figures 9 - 12, lookout trees continued to be



Figure 2. Forest Ranger J. D. Jones on forest fire patrol duty, 1923, Cibola National Forest, New Mexico (U. S. Forest Service photo, 178060).



Figure 3. Forest officers climbing to Lookout Point to determine location of a fire, Coconino National Forest, Arizona, ca. 1915 - 1920 (U. S. Forest Service photo 90930).



Figure 4. Ranger G. B. Rencher sighting Indian Reservation fire with alidade and protractor from Rose Peak lookout, Apache National Forest, Arizona. C. W. Mckibbin, 1913 (U. S. Forest Service photo, 15238A).



Figure 5. Lookout guard D. W. Edgar sighting fire with alidade and protractor on top of Baldy Mountain (11,200 feet), Apache National Forest, Arizona, 1913 (U. S. Forest Service photo, 15236A).

utilized into the 1950s. They were also utilized in lower elevations to obtain a quick observation point when a more permanent lookout could not provide adequate information. Fire crews may have used lookout trees to monitor the progress of a fire or watch for spot fires. In some cases, more elaborate platforms were constructed on the tops of trees and a small cabin built nearby which suggests more permanent use. Lookout trees are frequently found in the vicinity of modern day lookouts, indicating long-term use of the site for fire detection.

The first observation-only wooden towers probably were constructed before World War I and into the early 1920s. Many of these early timber towers represent a design type borrowed to some degree from the oil and railroad industries (Thornton 1986:29). There was little standardization. A wide variety of styles was evident as illustrated in Figures 13 - 27. Some of these early towers were constructed of logs cut on the site while others appear to have been constructed with commercial timber.



Figure 6. Lookout guard sighting with alidade and protractor, Cibola Forest Reserve, New Mexico, ca. 1910 (U. S. Forest Service photo, 18831A).



Figure 7. At the protractor on St. Peter's Dome, Santa Fe National Forest, New Mexico. Photo by S. F. Wilson, 1932 (U. S. Forest Service photo, 270383).



Figure 8. Mount Union lookout, Prescott National Forest, showing the method of installation of a temporary lookout. Photo by J. D. Jones, 1921 (U. S. Forest Service photo, 162953).



Figure 9. Hull Tank lookout tree, Kaibab National Forest, Arizona, 1916 (U. S. Forest Service photo, 15589A).



Figure 10. Blue Ridge cabin lookout tree on Coconino National Forest, Arizona. (U.S. Forest Service photo 267782 by S. F. Wilson, 1932).



Figure 11. Bill Williams lookout tree, Kaibab National Forest, Arizona. Photo dated 1924 (U.S. Forest Service photo, 189369).



Figure 12. Whites Peak lookout, Carson National Forest, New Mexico in 1947; constructed in early 1920s (U. S. Forest Service photo). Note the elaborate platform for this lookout tree.



Figure 13. Promontory Butte lookout tower, Sitgreaves National Forest (U. S. Forest Service photo 16471A by C. H. Kissam, 1913).



Figure 14. Promontory Butte lookout tower in 1925, Sitgreaves National Forest, Arizona (U. S. Forest Service photo 16225 by Quincy Randles). Note that by this time the old straight up-the-side ladder had been replaced with a stairway type.



Figure 15. Pat Knoll lookout tower, Apache National Forest, Arizona (U. S. Forest Service photo 162865 by Quincy Randles, 1914).

Most of these early wooden towers used an "X" brace construction design, although a few used a "Z" brace design. Most of the platforms on top of the towers were roofless and open on the sides with only a guardrail. A few were enclosed on the sides (Figures 20 - 21) and a few had roofs (Figure 23). The San Antone Lookout in the Carson National Forest in New Mexico, probably constructed in the early 1920s, had a short tower attached directly to a log cabin. This unusual lookout survived into the late 1940s when it was razed by the Forest Service. None of these towers appear to have had any lightning protection.

It is of interest to note that in a 1919 photograph (Figure 17) of the Sentinel Lookout Tower on the Chiricahua National Forest (now part of the Coronado National Forest) a telephone box can be clearly seen. Most fire guards stationed at a lookout in the early years of the Forest Service had to ride to a fire and extinguish it themselves or ride for help back to the ranger station. The need for better communication became an early focus on Forest Service research efforts (Gray 1982). The need to detect a fire and quickly report it necessitated the development of good field communications.

A variety of communicateion methods was used including the telephone, carrier pigeons, heliograph stations and, later, radios. The earliest record of telephone use comes from the Siskiyou Forest Reserve in Oregon in 1905 (Adams



Figure 16. Weed lookout tower, Lincoln National Forest, New Mexico. Photo by Ranger Wing, 1919, showing his wife on duty (U. S. Forest Service photo 43010A).

1906:468). The first telephone line built and owned by the USFS, a 109 mile section on the Big Horn Forest Reserve in Wyoming, was constructed in 1906 (Adams 1906:468). In the Southwestern Region telephone lines installed on the Gila National Forest as early as 1914 connected a lookout on Center Baldy to the Little Dry Creek Ranger Station. Spoerl (1981a:8) cites the Alamo Advisor of April 1911 which reported the construction of telephone lines on the Fairchild Ranger District of the Lincoln National Forest in New Mexico. By the early 1920s, most fire lookouts in the Southwestern Region had a telephone link to the outside world.

The USFS, in cooperation with the Vermont State Forestry Department, began researching the use of the radio for communication as early as 1909 (Gray 1982:19). The Southwestern Region made important early contributions to the development of the radio for communication purposes. In 1916 William R. Warner, posted at the Baseline Ranger Station on the Apache National Forest in eastern Arizona, was faced with the problem of stringing an expensive telephone line to his isolated ranger station. Gray (1982:19-20) reports that Warner, inspired by an amateur radio antenna he observed at a local ranch, purchased a similar radio from a mail order firm, constructed an antenna and started to experiment with transmitting. He caught the attention of R. V. Slonaker, a telephone engineer for the



Figure 17. Old Sentinel tower, 1919, Chiricahua Division (now part of Coronado National Forest, Arizona). U. S. Forest Service photo, 235733. Notice the telephone box in the foreground.



Figure 18. Mt. Lemmon lookout, Coronado National Forest, Arizona, ca. 1920 (U. S. Forest Service photo, 23715A).

Southwestern District, who had, in 1914, recommended radio experiments in the Carson National Forest in New Mexico. On November 26, 1917, Warner transmitted the first official USFS wireless message from the Baseline Ranger Station on the Apache National Forest to Clifton, Arizona, a distance of forty miles.

Warner's experimental work was significant in that it encouraged the Southwestern District (Region) to conduct further research. Other forests in various parts of the country followed the lead of the Southwestern Region. In the late 1920s, the USFS regarded the radio as inadequate and too expensive (Gray 1982:28-29) so they curtailed research for nearly five years. However, the first steps toward a modern communication system had been taken.

By the early 1920s, some steel observation towers began to appear in the national forests of the Southwestern Region. Figures 28 and 29 show two early examples: one in the Kaibab National Forest in Arizona and the other in the Lincoln National Forest in New Mexico. Historic photographs indicate that although the platforms are different, most of the towers were similar, utilizing an "X" brace support system. These towers may have been manufactured by the Aermotor Company of Chicago, Illinois. An early brochure issued by this company (Aermotor 1903) shows tower designs very similar to the early steel lookout towers illustrated in Figures 28 and 29. It is not known how many of these steel platforms



Figure 19. Mt. Bigelow lookout tower, Coronado National Forest, Arizona (U.S. Forest Service photo 163171 by C. W. Mckenzie, 1921).



Figure 20. Lookout tower near McGaffey Mill, Cibola National Forest, New Mexico (U.S. Forest Service photo 178064 by J. D. Jones, 1922).

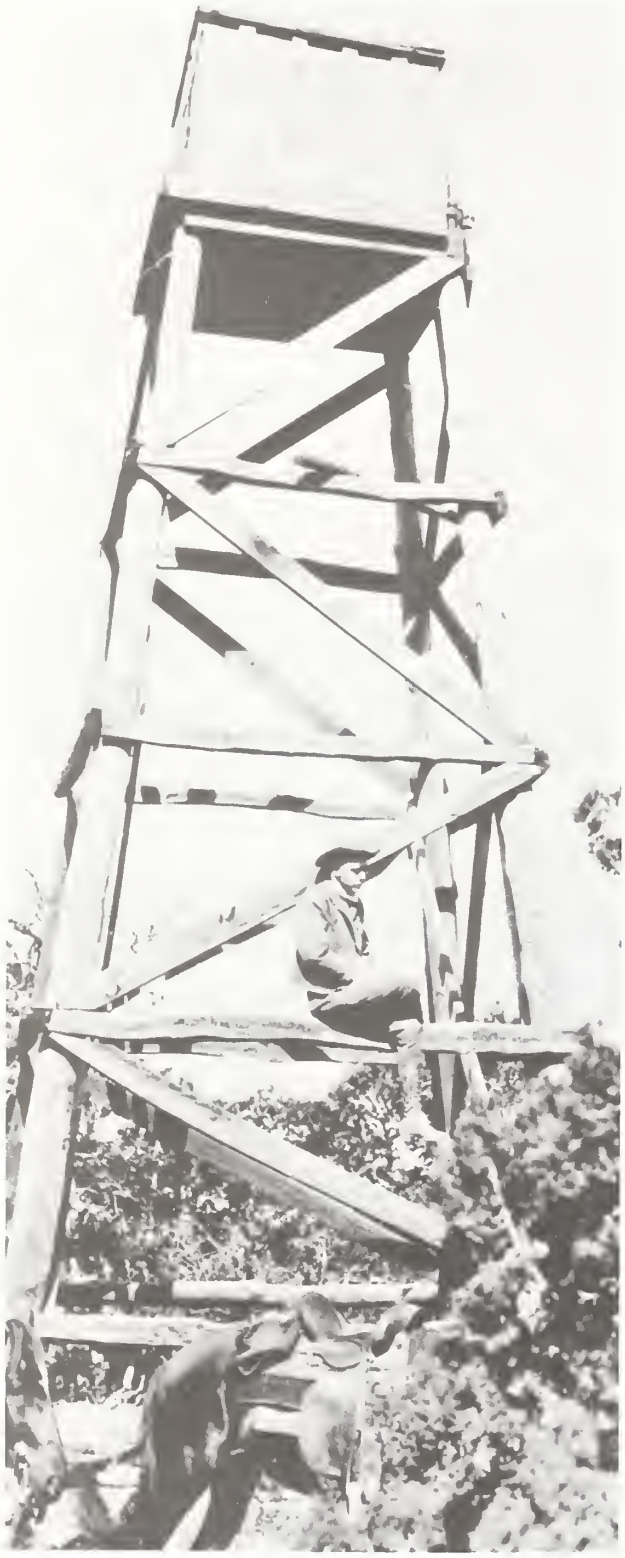


Figure 21. Cedro Peak lookout tower, Cibola National Forest, New Mexico (U.S. Forest Service photo 171232 by K. C. Kartchner, 1922).

were erected in the Southwestern Region.

Although standardization of lookout designs was not to be accomplished until the 1930s, the effort in this direction started two decades earlier. In his study of lookouts in California, Thornton (1986:14) mentioned early research on fire detection by Coert duBois as being significant in the development of modern techniques. In 1911, duBois, developed a plan for fire detection in the Stanislaus National Forest. He stressed the designation of key mountain tops as permanent lookout points and the recording of fire statistics. Graves (1910) had introduced the concept of "primary" lookouts several years earlier.

In 1914, duBois published a comprehensive study of fire control (duBois 1914). He introduced a standardized plan for a 12 feet by 12 feet wooden live-in cabin and also recommended the use of Aermotor Company Steel observation towers. Thornton (1986:15) reports that in 1917, duBois presented Plan Number 4-A, Primary Lookout Building Standard for District 5, which was for a 14 feet by 14 feet wood live-in cab. This plan established a basic design and floor plan for all live-in cabs built since that time.

It is important to note that the major fire detection research sponsored by the USFS occurred in Region 5 from 1914 through the late 1930s. This research had an influence in other regions largely through the publication of articles on fire management in USDA journals. Other regions also conducted research and contributed to the modification and development of lookout design.

The early wooden live-in lookout towers in the Southwestern Region were modeled to some extent after the duBois design. Early photographs (Figures 30 - 31) show lookouts on the Kaibab and Gila National Forests in the early 1920s that closely resemble the tower cabs in the duBois designs. Figures 32 - 34 show other types of early wooden live-in lookout towers that do not appear to match any of the standardized plans examined. The assumption is that they represented local design plans for which information is unavailable. Figure 35 illustrates a live-in tower constructed in 1932 on Volunteer Mountain in the Kaibab National Forest and probably represents an L-6 design (8 feet by 8 feet) developed in the Northwestern Region (Kresek 1985:11).



Figure 22. Wagon-Tongue lookout tower, Apache National Forest, Arizona (U. S. Forest Service photo 177930 by J. D. Jones, 1923).



Figure 23. Highland Park lookout tower and cabin, Apache National Forest, (U. S. Forest Service photo 177940 by J. D. Jones, 1923).



Figure 24. Lookout tower on Kaibab National Forest, Arizona, E. S. Shipp, 1930 (U.S. Forest Service photo, 253478).



Figure 26. Canjilon Mountain lookout, Carson National Forest, New Mexico, 1946 (U.S. Forest Service photo).



Figure 25. San Antone lookout, Carson National Forest, New Mexico, 1946. This tower was constructed in the early 1920s (U.S. Forest Service photo).



Figure 27. Gila lookout tower on Gila National Forest, New Mexico, ca. 1920 (U.S. Forest Service photo, 17951A).



Figure 28. Carrissa lookout tower (steel) on Lincoln National Forest, New Mexico in 1921 (U.S. Forest Service photo 152409 by O. Fred Arthur).



Figure 29. Grand Canyon lookout tower on Kaibab National Forest, Arizona in 1927 (U. S. Forest Service photo 221882 by J. D. Jones).



Figure 30. Bill Williams Mountain lookout tower, Kaibab National Forest, Arizona in 1924 (U. S. Forest Service photo 189371 by Roy Headley).



Figure 31. Hillsboro lookout tower on Gila National Forest, New Mexico, in the mid-1920s (U. S. Forest Service photo 210178).



Figure 32. Turkey Butte lookout on Coconino National Forest, Arizona in 1932 (U. S. Forest Service photo 267758 by S. F. Wilson).



Figure 33. Woody lookout on Coconino National Forest, Arizona in 1932 (U. S. Forest Service photo 267762 by S. F. Wilson).



Figure 34. Mt. Sedgewick lookout tower, cabin and cistern, Cibola National Forest, New Mexico, constructed in the 1920s. Photo by R. H. Lewis in 1948. (U. S. Forest Service photo 454118).

Airway Becon On Cedro Peak:

The Department of Commerce was recently issued a Special Use permit to construct a 40 ft. steel tower on which is to be placed a beacon light. Incidently, we are to be given the privilege of using this tower for our lookout. A power plant is to be installed to supply the beacon with juice. (Manzano Ranger).

The Forest Pioneer, April 1929 (p. 12)



Figure 35. Volunteer Mountain lookout constructed in 1932 on Kaibab National Forest, Arizona. Photo made by R. H. Lewis in 1938 (U.S. Forest Service photo number 399591).

A New Cause Of Forest Fires:

Completion of four beacon lights and one emergency landing field is all that remains to finish construction of a $50,000 system of lights to guide night air mail pilots over northern Arizona. Erected at ten mile intervals, 19 beacons have been placed on the route between Kingman and Winslow. The remaining beacons will be erected at Supai Mountain, Bill Williams Mountain, Davenport Lake and Garland Prairie. All beacons will be in operation within 30 days. The Garland Prairie emergency landing field embraces almost 200 acres. When completed, the route across northern Arizona will be an important section of the shortest and best-lighted transcontinental night air lanes. The blazing Arizona sunshine has presented a difficulty unexpected by the contractors. Approximately $200 worth of equipment was destroyed as the result of a small forest fire on the top of Volunteer Mountain, caused by the sun's rays focusing through one of the 3-foot beacon lenses. Mr. Schmitt, the contractor said utmost care must be used in handling these large lenses on sunny days to prevent fires.

The Forest Pioneer, Jan. 1933 (p. 8)

The Baker's Butte lookout tower (Figure 36) in the Coconino National Forest, Arizona, closely resembles those shown in Figures 32, 33 and 35, except that it is supported by an "X" brace steel tower.

One of the early USFS standard lookout plans was the D-6 cupola designed by Lige Coalman in Oregon. The first D-6 cupola was placed in 1915 on top of Mount Hood outside of Portland, Oregon. The lower part of the frame house measured 12 feet by 12 feet with windows all around and a glassed-in observatory cupola on the roof. Kresek (1985:11) reports that over two hundred D-6s were built on mountain tops in Oregon, Washington, Idaho and Montana. While the D-6 cupola did not become as popular in the Southwestern Region, there were a number of them erected (Figures 37 - 40) on the Coronado, Coconino and Cibola National Forests. Unfortunately, none of these have survived. The D-6 cupola lookout house represented one of the most attractive architectural forms in the variety of fire detection structures. Fortunately, a number of them have survived in the national forests of the Northwest.

The history of fire lookouts in the Southwestern Region has been one of type replacements over the years. The early nonstandard towers (Figures 32 - 34) were gradually replaced in many cases by Aermotor Company towers. Figure 41 illustrates an Aermotor MC-24 tower (1925) replacing an old wooden tower in the background.

In the late 1920s, the L-4 lookout house came into prominence. It appears that this 14 feet by 14 feet structure was based largely on the earlier designs of duBois (1916). A number of these were built in the Southwestern Region and



Figure 36. Bakers Butte steel lookout tower, Coconino National Forest, Arizona. Photo by C. N. Lochman, 1921 (U. S. Forest Service photo 162226).



Figure 37. Santa Rita Baldy lookout house, a D-6 cupola on Coronado National Forest, Arizona, constructed in 1927. Photo by S. F. Wilson made in 1929 (U. S. Forest Service photo 235317).



Figure 38. Deadman lookout house, a D-6 cupola, constructed in 1928 on Coconino National Forest, Arizona. Photo by Richard B. Lewis made in 1948 (U.S. Forest Service photo 454127).



Figure 39. Mt. Withington lookout house, a D-6 cupola constructed on the Cibola National Forest, New Mexico, in 1934. Photo by W. E. Wiltbank made in 1945 (U. S. Forest Service photo 435132).



Figure 40. Mt. Wrightson lookout house, a D-6 cupola on Coronado National Forest, Arizona. It was constructed between the late 1920s and early 1930s (U.S. Forest Service photo).

some have survived. The earliest L-4s had a gabled roof with heavy shutters that provided shade over the windows. The models built from 1933 to 1953 have a hip roof (Kresek 1985:11). Over a thousand of these L-4s were erected nationwide: some were on the ground, but many on a tower. The L-5 was a scaled down L-4 which measured 10 feet by 10 feet. Kresek (1985:12) reports the L-5 was a log version of the L-4 designed on the Nez Perce National Forest in Idaho. Figures 42 - 46 illustrate a few examples of L-4s that were erected in Region 3.

The Aermotor Company of Chicago, Illinois, began manufacturing windmills, pumps and tanks in 1888 at 110 - 112 South Jefferson Street. The first president of the company was L. W. Noyes. This company came to have a special relationship with the USFS as a major supplier of prefabricated steel lookout towers. Endorsed by duBois in his 1916 report, some Aermotor towers were erected on the national forests of the Southwestern Region in the 1920s as shown in Table 1.

The Aermotor Company provided thousands of lookout towers for both federal and state forestry departments for over fifty years. The company moved to several different locations in Chicago and remained in business until the late 1960s. Nearly fifty percent of the lookouts in this study are Aermotor towers. A variety of types was made: MC-39, LX-24, MC-99, MI-25, MC-24, LL-25 and LS-40. They differ primarily in the design of cab shape, windows, stairs, ladder placement and size.

Table 1

Aermotor Towers on National Forests

Site	Forest	Date
Deer Springs	Apache-Sitgreaves	1923
Promontory	Apache-Sitgreaves	1924
(once the tallest tower in the region)		
Weed	Lincoln	1926
Mayhill	Lincoln	1927
Rose Peak	Apache-Sitgreaves	1929

The earliest cabs on the towers measured 7 feet by 7 feet. Later, the Aermotor Company built larger cabs (up to 14 feet by 14 feet) that could be lived in. Cabs were constructed of both steel and wood. The towers were all battered (slanting gradually backward from the base; a lookout tower whose walls are not perpendicular with the plane of the ground surface) steel and utilized an "X" brace support design. Figures 47 - 49 show early Aermotor towers on the Apache-Sitgreaves, Cibola and Carson national forests.



Figure 41. Rose Peak lookout tower, an Aermotor MC-24, under construction with the older wooden tower in the background. The site is on the Gila National Forest, New Mexico. Photo by I. B. Lash in 1928 (U. S. Forest Service photo 233862).

WO Completes Study On Steel Vs. Timber Towers:

The investigation of timber and steel lookout towers to determine the suitability of the timber structure as compared to steel and the relative costs of each type has been completed by the W.O. Division of Engineering. Erection cost records for approximately 150 towers were analyzed. They show that on the average timber towers are more expensive to erect. The average higher cost of timber towers for the 7 x 7 foot cab type, including erection, labor, footing materials and labor, lightning protection materials and labor, and inspection at contractor's plant is $165 for 120-foot tower, $135 for 100-foot tower, $110 for 83-foot tower, and $80 for 67-foot tower.

As a general rule, future procurement of towers of standard design will be handled by taking alternate bids on timber and steel and including the foregoing figures in comparing bids.

The evaluation figures do not contain anything for transportation from rail head to tower site. On towers where long or difficult hauls are involved this may be important. For such cases requisitions will contain detailed information on estimated hauling cost per ton mile in order that this factor may be given proper consideration.
(from WO Information Digest)

The Forest Pioneer, 3rd Quarter 1941 (p. 19)



Figure 42. Red Top lookout house, type L-4, in 1946, Santa Fe National Forest, New Mexico. It was constructed in 1933 (U.S. Forest Service photo).



Figure 43. Rosilla lookout house (L-4 or L-5 log), Santa Fe National Forest, New Mexico, photographed in 1937. It probably was constructed in the early- to mid-1930s (U.S. Forest Service photo).



Figure 44. St. Peters Dome lookout house (L-4), Santa Fe National Forest, New Mexico, photographed in 1946 during repair work on the windows. It was constructed between 1933 and 1935 (U.S. Forest Service photo).



Figure 45. Capilla Peak lookout house (L-4), Cibola National Forest, New Mexico was constructed in 1927. Photograph by W. H. Shaffer, 1939 (U. S. Forest Service photo 383518).



Figure 46. La Mosca lookout house (L-4) on Cibola National Forest, New Mexico. This was constructed in 1940. Photographed by Wayne Winters in 1950 (U. S. Forest Service photo 461601).



Figure 47. Promontory lookout, an Aermotor LS-40 with a 120 feet high tower, on Sitgreaves National Forest, Arizona. It was constructed in 1924 to replace the wooden tower in Figures 13 and 14. Photograph made by F. L. Kirby in 1934 (U. S. Forest Service photo 288837).



Figure 48. Kiowa lookout tower (an Aermotor type LL-25) located on the Carson National Forest, New Mexico. This lookout was constructed in 1923; the photograph was taken in 1938 (U. S. Forest Service photo).

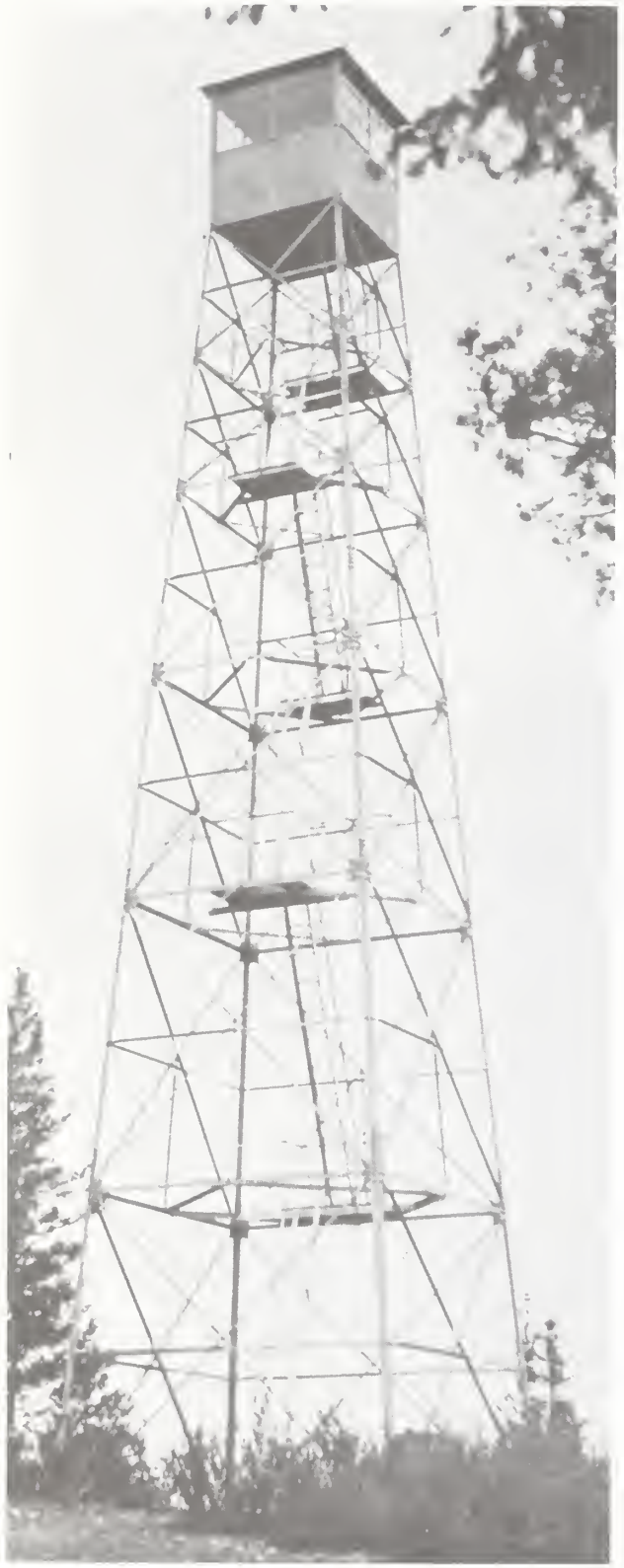


Figure 49. San Mateo lookout tower (Aermotor MC-40), constructed in 1934 on Cibola National Forest, New Mexico. Photograph made by W. E. Wiltbank in 1945 (U. S. Forest Service 435133).

On the Lincoln National Forest in New Mexico, the Monjeau lookout (Figure 50), constructed in 1940 by the CCC, represents one of the most attractive and unusual types in the Southwestern Region. It is constructed of native stone with the living quarters located underneath the 7 feet by 7 feet observation cab. Illustrated in the 1938 USFS Standard Lookout Structure Planbook, Monjeau attracts thousands of visitors each year and is regarded as the pride of the Lincoln National Forest (Irwin 1986:1-5).

The lookout towers frequently have associated outbuildings, including cabins, storage sheds, privies, corrals and other structures at the site. The cabins were built to provide living quarters for the lookout guards, particularly for those sites with 7 feet by 7 feet observation towers. Information on cabin plans and designs was not always recorded. The cabins at lookout sites were not specifically designed for lookout sites, but also were used at other administrative sites. Figures 51 - 53 are examples of cabin types. The earliest structures used for living quarters were log cabins built from materials at hand. Starting in the 1920s, these were gradually replaced by more standardized wood frame cabins.

Storage sheds and privies also appear to have been built to standard plans. Barns and corrals provided shelter and confinement for horses and were common in the early decades, and then declining after the adoption of automobiles and trucks. These associated structures are regarded as important parts of the lookout site complexes and also are evaluated when the inventory forms contained information on them.

Lookout designs became standardized in the early 1930s. The research of Show and Kotok (1937) in Region 5 at the Pacific Southwest Forest and Range Experiment Station was influential in the trend toward standardization that culminated with the publication of the Standard Lookout Structure Planbook in 1938. With the large pool of labor available through the creation of the CCC and allied relief programs, the construction of lookouts accelerated in all regions of the country. Most of the lookouts built by the CCC in the Southwestern Region between 1933 and 1942 were constructed utilizing standard plans. By standardizing plans and preselecting sites, the Forest Service could order and ship all the necessary material to the regional or district offices.



Figure 50. Monjeau lookout, constructed in 1940 on the Lincoln National Forest, New Mexico. This is perhaps the most unique lookout in the Southwestern Region. It combines a metal cab manufactured by International Derrick with a tower of native stone. It is the only example of a "rustic style" lookout in the Region. Photo by W. J. Mead made in 1941 (U. S. Forest Service 413954).



Figure 51. Diamond Point lookout cabin, Tonto National Forest, Arizona in 1937. This was constructed during the early 1920s (U.S. Forest Service, 354456).



Figure 53. Boiler Peak lookout cabin, Gila National Forest, Arizona, 1946 (U. S. Forest Service photo).



Figure 52. St. Peters Dome lookout cabin on Santa Fe National Forest, New Mexico, photographed in 1932 (U. S. Forest Service photo 270384).

The standardized plans included designs for cupola houses (D-6), towers and cabs. It is difficult to identify specifically all of the plans. A multiplicity of designs were being generated in different regions and eventually they were brought together in the 1938 planbook. Details from plan drawings for some different design types readily identifiable in the Southwestern Region are shown in Figures 54 - 70. It should be noted that some of the plans represent lookouts that once existed in the Southwestern Region, but have since been replaced.

Aermotor towers were incorporated into the standard plans. The USDA Forest Service L-1400 series standard plan represents a generalized Aermotor tower and a cab. Other standard plans included the CT-1 observation-only and the L-501 wood platform. Standard plans for 12 feet by 12 feet and 14 feet square observation live-in lookout structures included a variety of Aermotor type designs, the USFS CT-2 and the CL-100 to CL-106 series for towers and cabs.

The Forest Service in Region 3 made extensive use of Aermotor towers. As mentioned earlier, they represent nearly one-half of the surviving lookout towers. The earliest ones date to the mid-1920s with the most recent ones dating to the 1960s. Several wood CT-1 and CT-2 towers were constructed at the time of World War II, perhaps reflective of metal shortages.

A few Aermotor towers were erected after the war. Overall, the number of new lookouts constructed dramatically dropped until the advent of the Increased Manning Experiments during the 1950s and 1960s. Nearly twenty new lookouts were built then. Almost all were on the standardized plans from the CL-100 to CL-106 series. These types, also known as R-6 "flats", were placed on steel towers and on concrete blockhouse bases.

There are a few lookouts in the Southwestern Region that were designed by companies other than the Aermotor Company. These firms included the International Derrick Company, the Pacific Coast Steel Company and the McLintock - Marshall Construction Company.

The International Derrick Company provided steel towers and steel cabs 7 feet square for lookouts on the Coconino National Forest (Lee Butte) and the Lincoln National Forest (Bluewater) in the 1930s. Both of these lookouts closely resemble

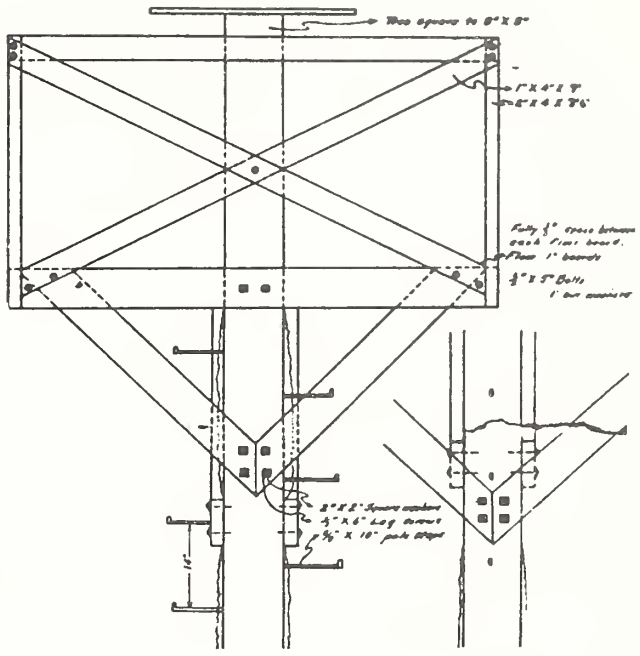


Figure 54. Detail from plans for the Tree Development Observatory, 1933. Designed for use on the Kootenai National Forest, Montana and Clearwater National Forest, Idaho.

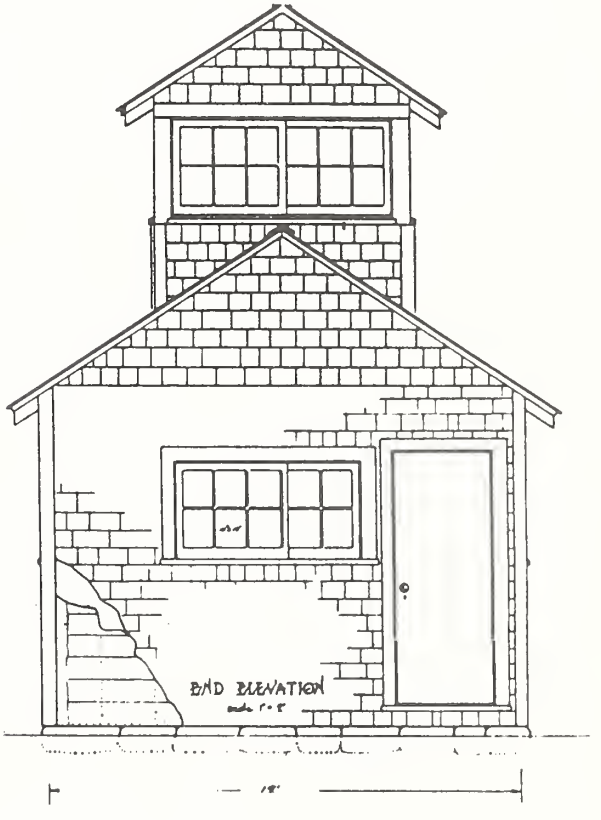


Figure 55. Frame lookout house, Plan L-2, 1928. This style was designed in the Northern District (Region 1).

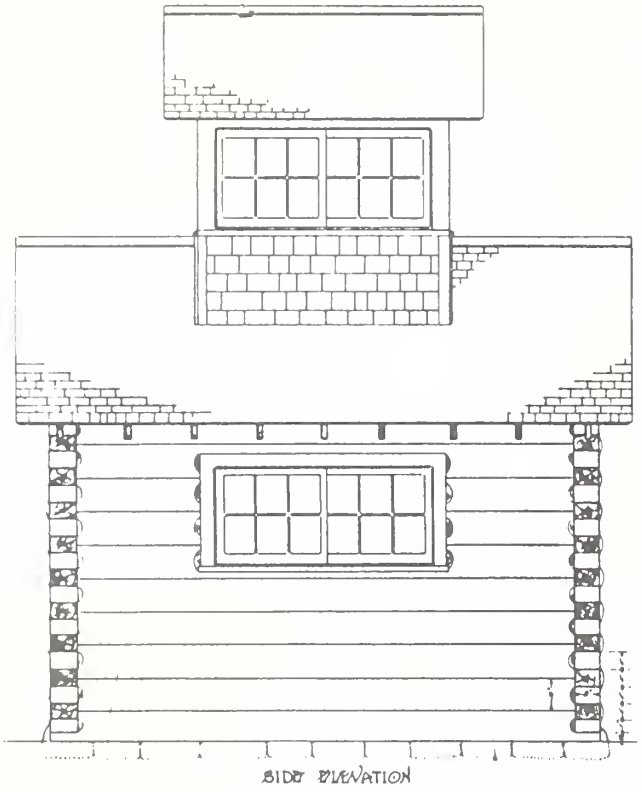


Figure 56. Log lookout house, Plan L-3. This illustration was drafted in 1928 for the Northern District. It is only a portion of the plan sheets for this structure. As with the other Figures in this series (54 through 70) only one representative view or other interesting detail was selected from each set of plans.

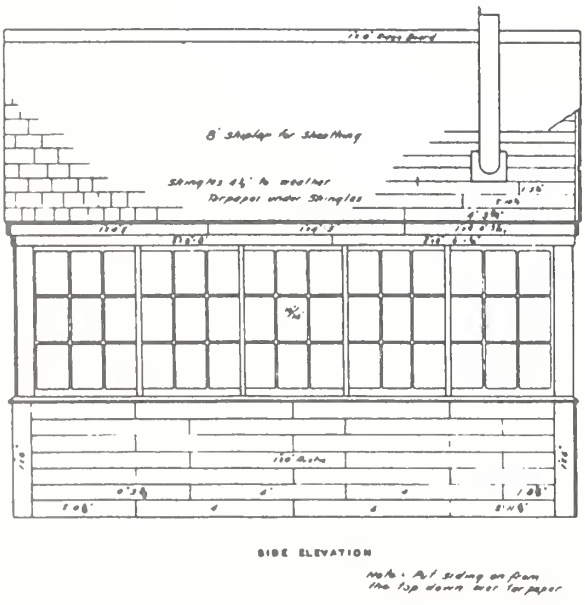


Figure 57. Lookout house, Plan L-4, 1930 (1931 revision), Northern District No. 1.

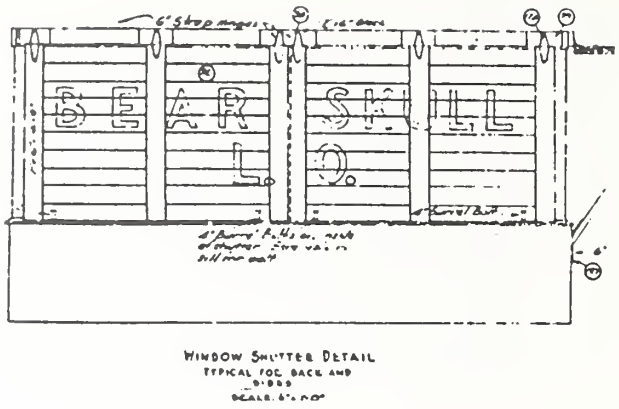


Figure 58. Lookout house window shutter detail, Plan L-4, 1931 (1932 revision), Northern District No. 1. This view is particularly interesting in that it shows how the name of the lookout might be displayed on the shutters.

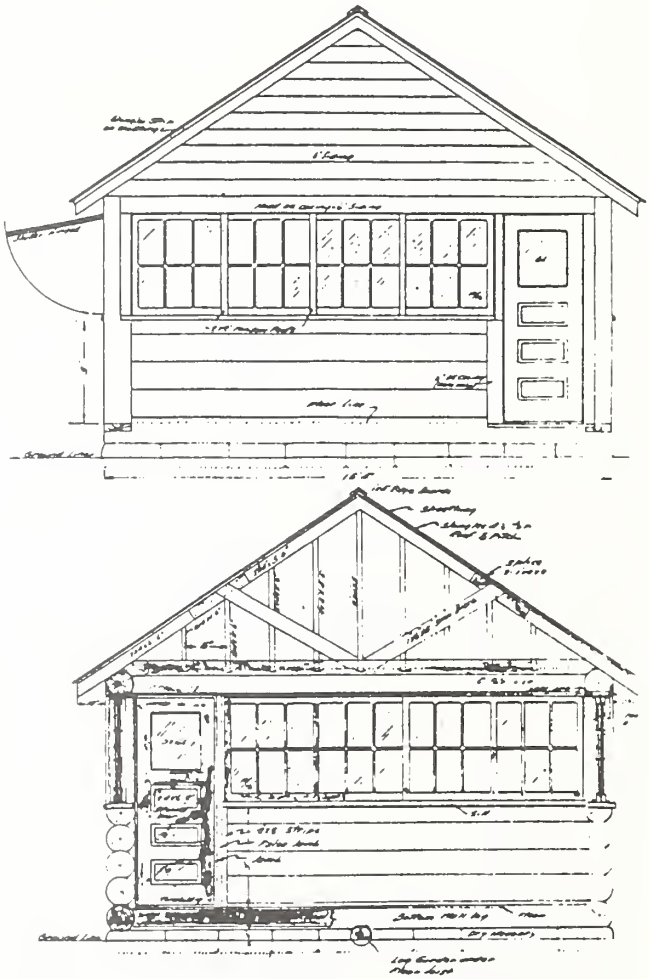


Figure 59. Log lookout house, Plan L-5, designed in 1928 for the Northern District. Roughly 18 feet by 14 feet, it provided both living and working space for the lookout. Its windows, with up to 30 panes to a side, provided good views.

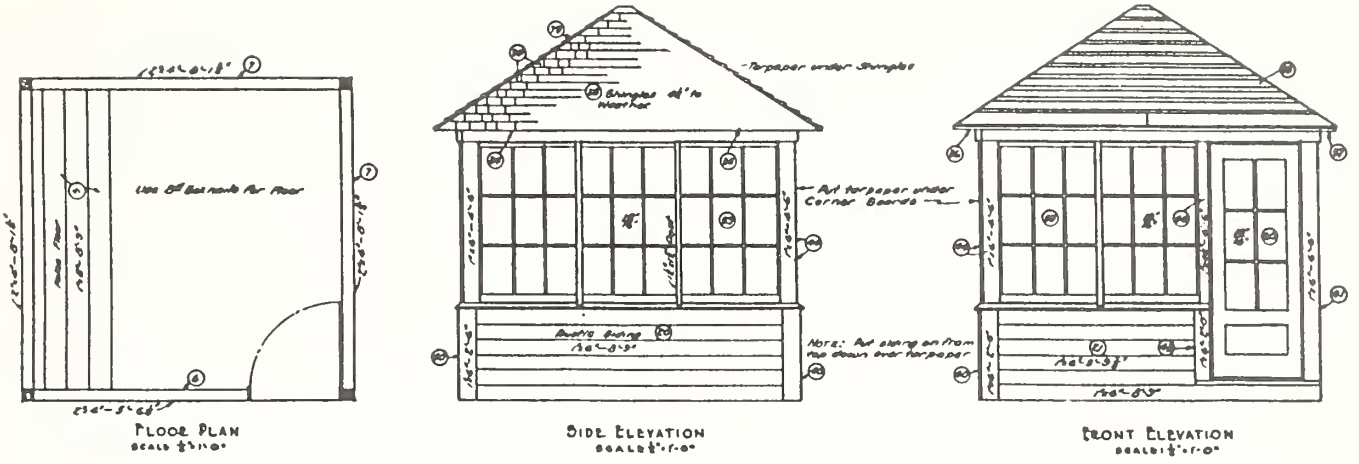


Figure 60. Patrol shelter or tower cupola, 1932, Northern District No. 1. Shown in plan as well as in side and front elevations, this eight foot square L-6 type structure could be used either on the ground or with T-1 and T-2 towers.

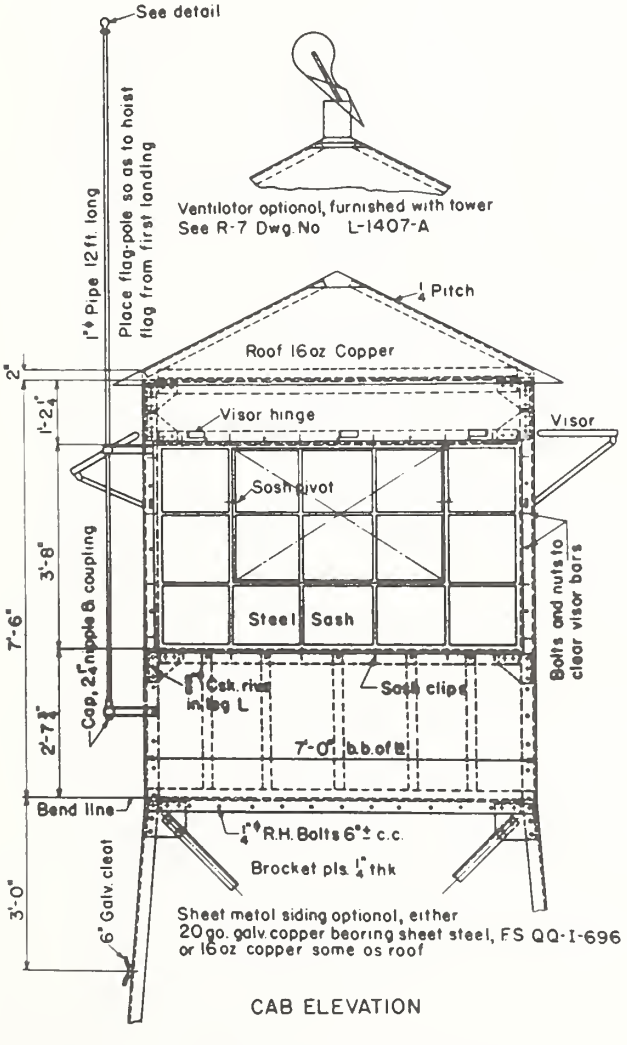


Figure 61. Standard steel lookout towers, 1937, Aermotor type (L-1400 series), 80 to 120 feet; Standard Lookout Structure Planbook, 1938.

Aermotor styles. No information was found on this company.

The Pacific Coast Steel Company designs were utilized for several lookout towers on the Coconino National Forest (Woody Mountain) and the Prescott National Forest (Horsethief, Towers Mountain and Mingus Mountain). The Pacific Coast Steel Company was incorporated in 1909 in San Francisco, California, for the manufacture of a variety of metal products including towers. In 1922 the company increased capital stock issues and became financially over-extended. The company was dissolved by court order in 1936 (Pacific Coast Steel 1909-1936). Their designs also were very similar to Aermotor Company types.

The McLintock - Marshall Construction Company of Pennsylvania and California also was involved in the construction of a lookout on the Prescott National Forest (Mingus). This company was incorporated in 1900 in Pennsylvania and was owned by H. H. McLintock, C. D. Marshall, and Andrew and Richard Mellon. The Mellon Family of Pittsburgh provided the financial backing for the company which became a very large and prominent manufacturer of structural steel. The Mellons were responsible for the manufacture of the structural steel elements for the locks of the Panama Canal, the Grand Central Railroad Station in New York, the George Washington Bridge in New York, the Golden Gate Bridge in San Francisco and the RCA building in New York. The company was bought for 70 million dollars in 1931 and was incorporated as part of Bethlehem Steel. The company apparently had a small subdivision that designed and constructed steel towers and cabs.

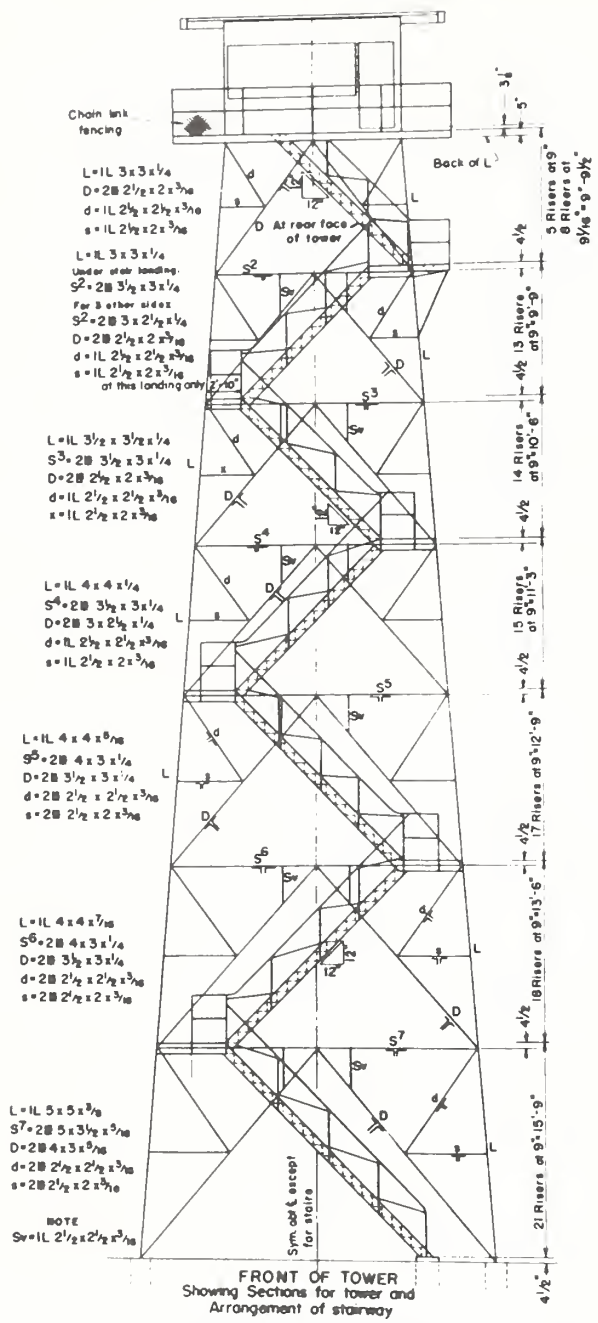
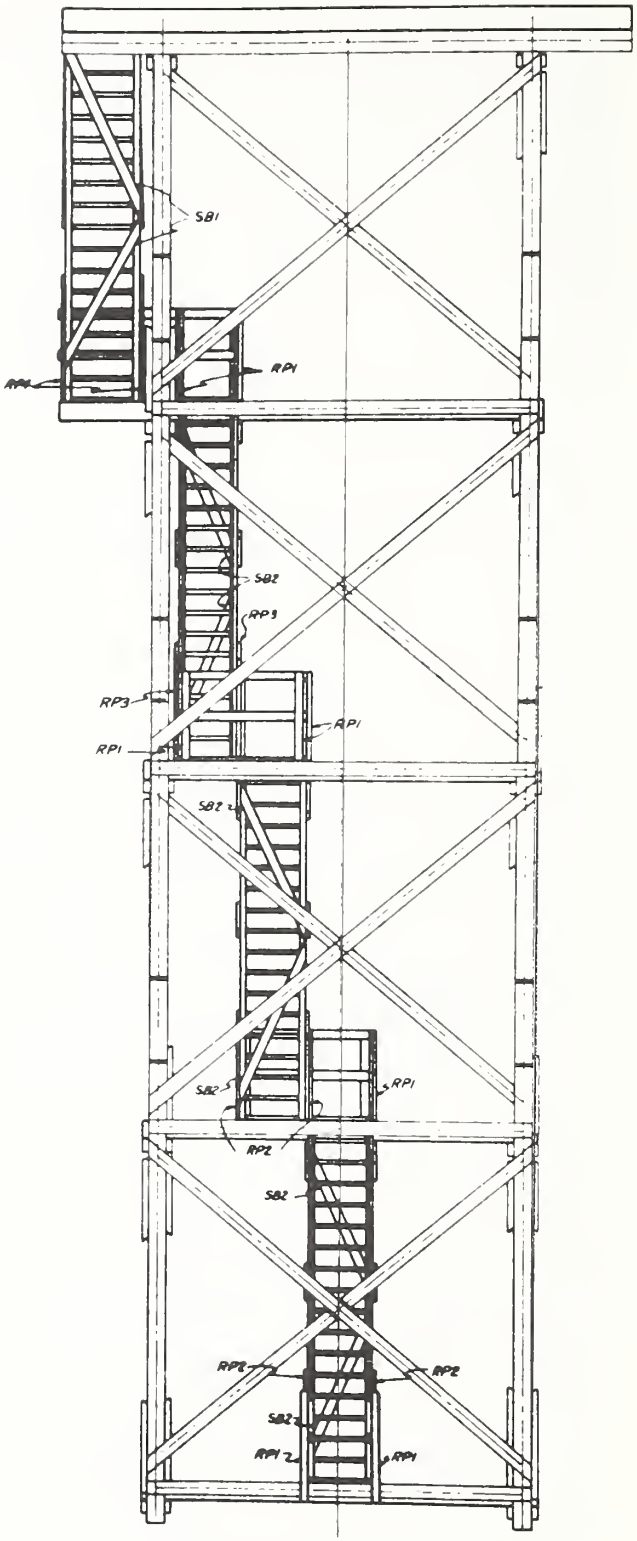


Figure 62. Standard steel lookout tower, CL-100 series, erected in sizes from 30 to 83 feet tall with living quarters. This drawing detail, along with Figure 61 and Figures 63 through 70, is from a 1938 Forest Service publication, "Standard Lookout Structure Plans." It was prepared by the Division of Engineering under the direction of its Chief, T. W. Norcross. Due to plan sizes, only portions of sheets are shown here.



FACE B

Figure 63. This plan shows the stair layout for the standard timber lookout tower, CT-2 series. It was drawn in 1938 and is 53 feet tall. The plans call for 8 by 8 inch timber for the main posts and 3 by 6 inch timber for diagonals.

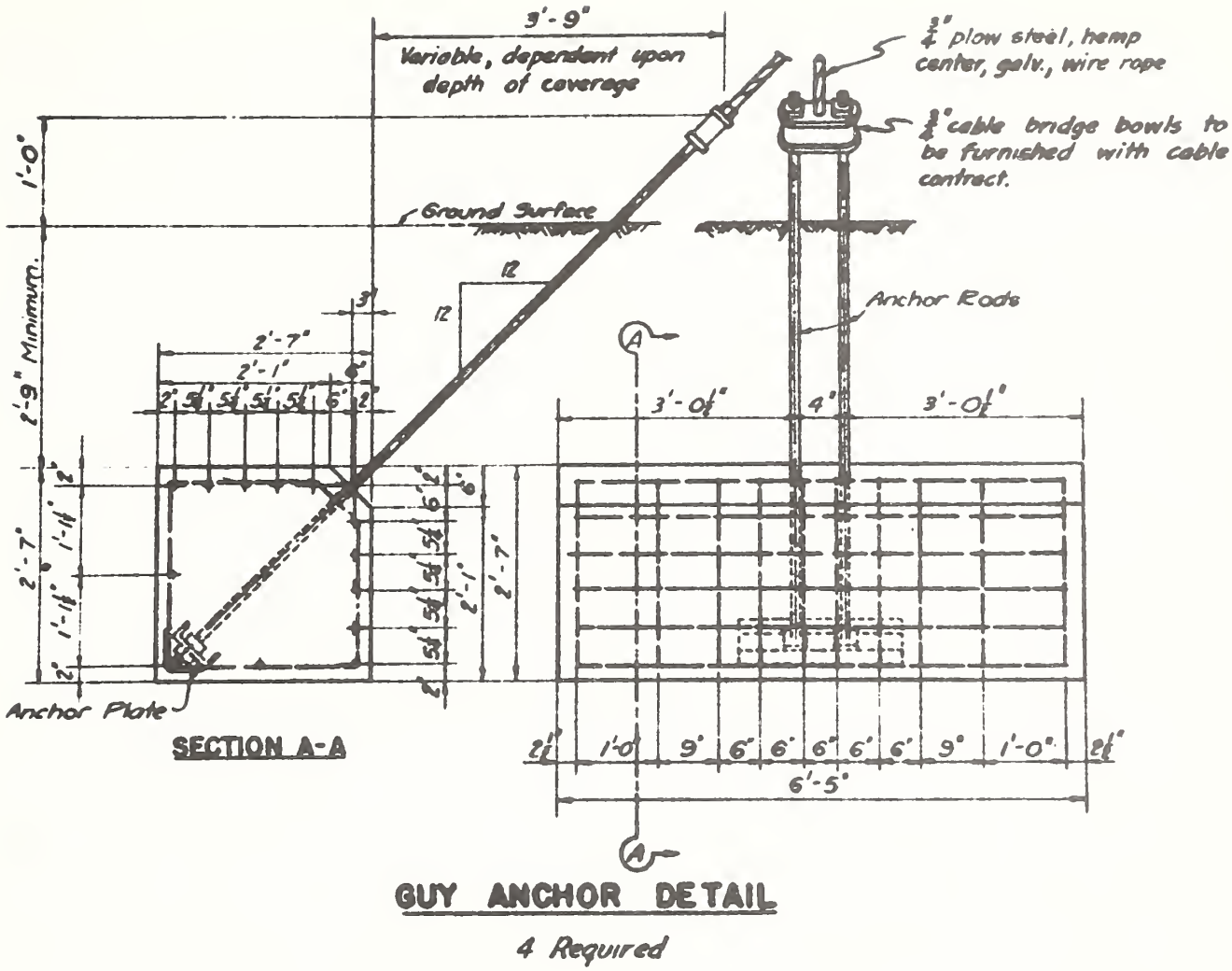


Figure 64. This particular anchor plan is for the standard timber lookout tower, CT-1 series, in the 119 feet version. Anchor plans for other types were very similar.

Indian Lookouts:

Ranger Earl of the Santa Fe Forest has just held a conference with the Cochiti Indians for the discussion of a cooperative agreement with the Indians and the Forest Service for the detection and suppression of forest fires. The Agreement which was signed by the Indian Governor, Lieutenant, and Captain of War, provides that the Indians shall keep a sharp lookout for fires in the forest. When one is discovered a protractor reading on the smoke will be made and a runner dispatched with the information to the Ranger's headquarters at Bland. Ranger Earl explained to the Indians how forest fires are located by triangulation through the extension of direction lines from two or more lookout points to the point of intersection and why it is necessary to have the protractor readings at the earliest possible moment. The Indians responded enthusiastically and the Lieutenant Governor was charged with responsibility for dispatching the messenger.

The Forest Pioneer, April, 1925

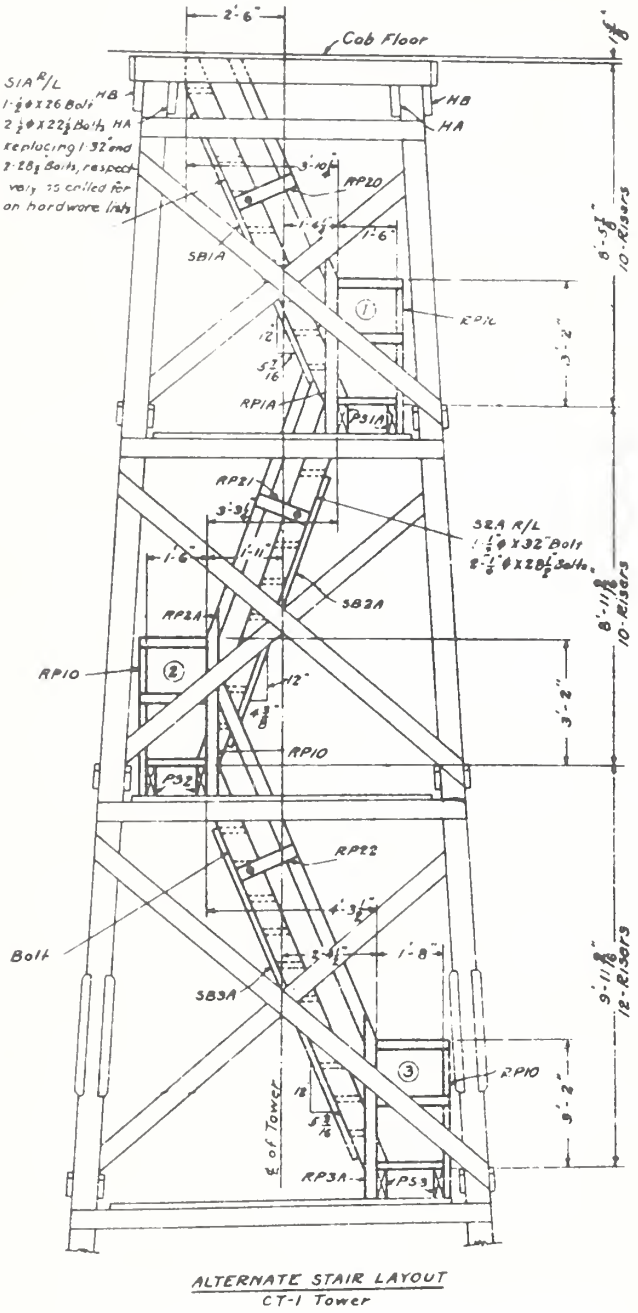


Figure 65. This figure reproduces a small section of a plan entitled "Alternate Details: Standard Lookout Tower Type CT1, for 52, 66, 82, 99 and 119 ft. Heights." This design was for use with 7 feet square tower cabs which did not have a catwalk. This particuar plan was drafted in Region 6 (Pacific Northwest) under the direction of James Frankland, Regional Engineer. Compare this design with Figure 63.

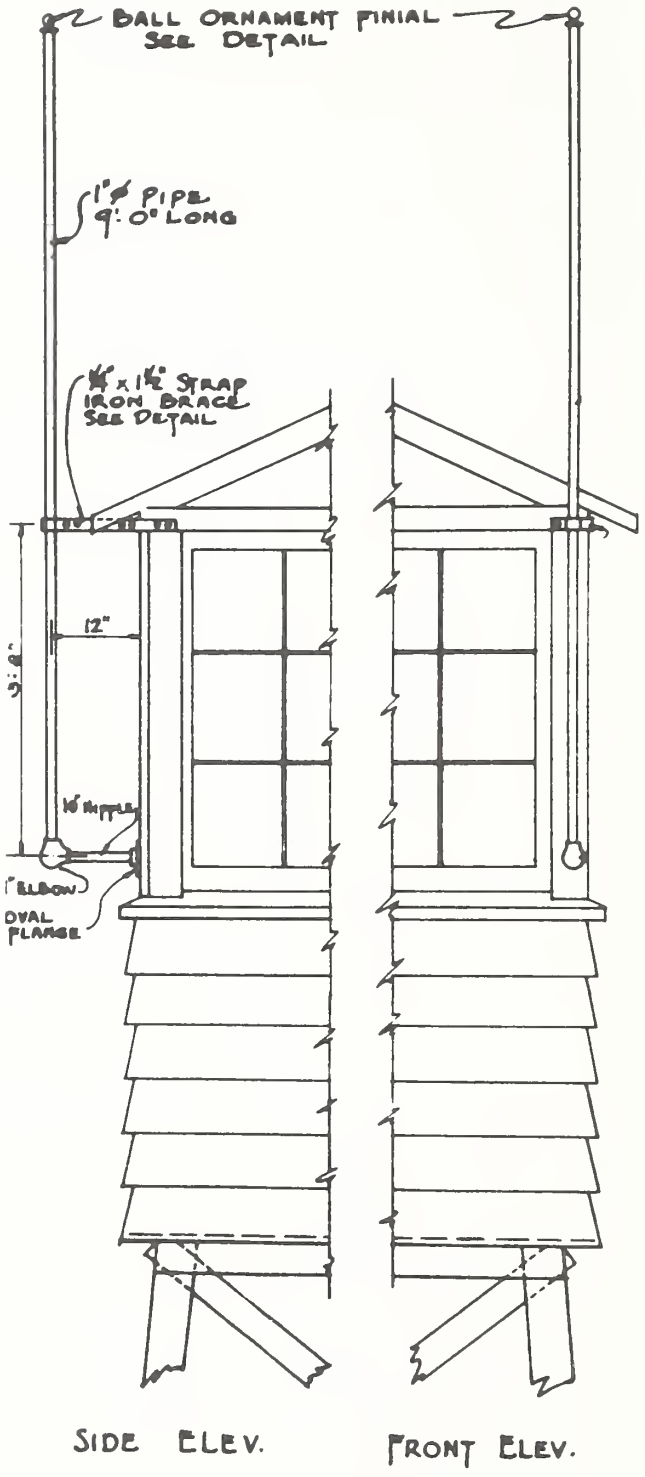


Figure 66. R-6 design for 7 feet square wooden cab for use with 100 feet and 120 feet high timber towers. This detail from the 1934 plans illustrated placement of the flagpole.

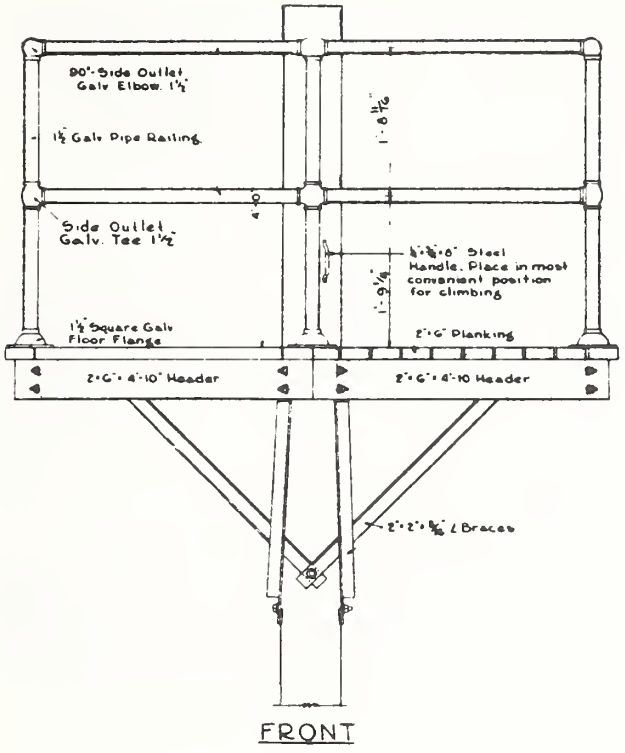


Figure 67. The "crows nest" detailed in plans for an "Observation mast for emergency lookout, 1937." These were to be only briefly occupied.

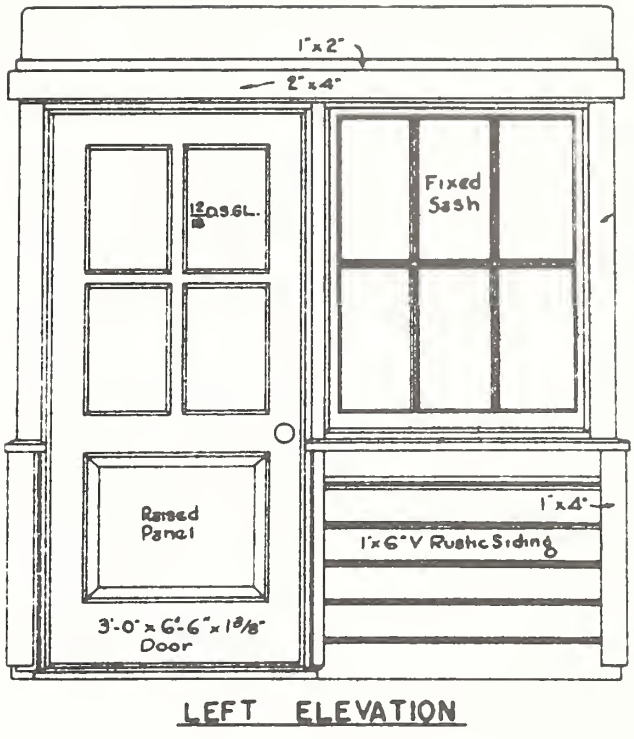


Figure 68. This standard wood lookout house, 7 feet square, was designed in 1934 for use with towers. In this version, without a catwalk, no shutters were provided.

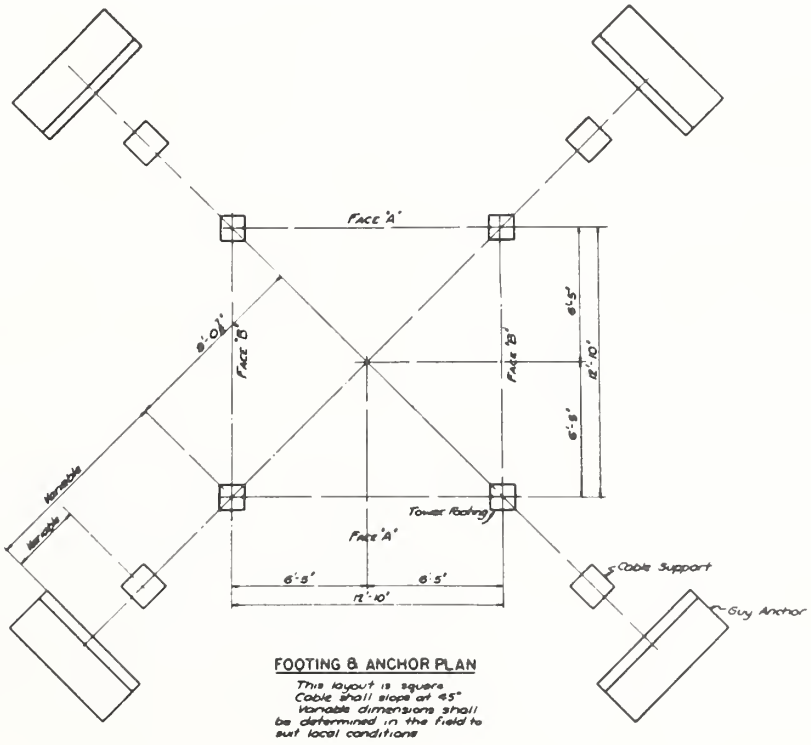


Figure 69. A typical tower footing plan. This was designed for a CT-2 timber lookout tower.

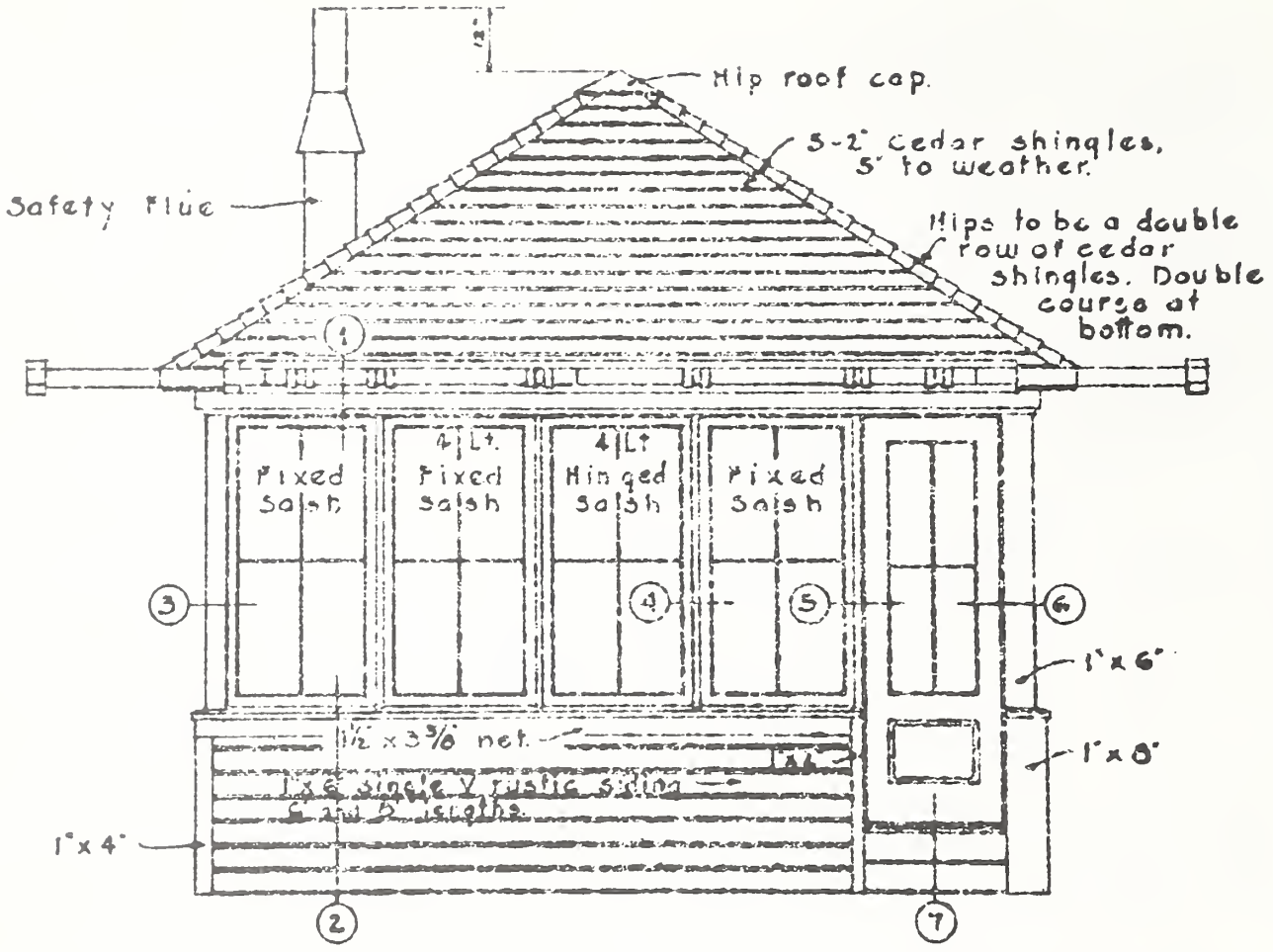


Figure 70. This lookout house was drawn in R-6 in 1934. It has a hipped roof, four light windows and a 14 feet square floor plan.

One piece of lookout equipment that deserves mention is the fire-finder. It is a device used to plot fires on a map and is a key element of the equipment in a lookout of any design type. It determines the lookout operator's working location within the cab.

Several different fire-finders have been developed and utilized over the years. The Godwin fire-finder, developed in 1912, was endorsed for use in Region 5 in 1914 (Thornton 1986:25). However, it was large and cumbersome and required a large platform that made it difficult to use in the small 7 feet square observation lookouts.

In 1911, William B. Osborne, an engineer working on the Mt. Hood National Forest, developed the fire-finding instrument that was to bear his name and become a standard piece of equipment on almost all Forest Service lookouts. Similar to an engineer's transit, it was a high-precision instrument with accuracy to one-sixtieth of a degree. Many other fire-finders would appear over the years: the Koch Board, the Minnesota in 1949, the Wisconsin Conservation Department's, the Kentucky, and the Arkansas (Kresek 1985:29). All would be short-lived. The Osborne, scaled down in size in 1934, became the standard for all lookouts. It was first used on the Larch Mountain lookout, Mount Hood National Forest in 1914. Figures 71 and 72 show examples of the Osborne fire-finder.

While this research has focused on the Southwestern Region (R-3), it has been necessary to look to other regions, particularly the Pacific Southwest [California] (R-5), the Pacific Northwest (R-6) and the Northern (R-1) all of which influenced lookout design and later standardization in the Southwestern region.

The prevention of wildfire was a major consideration of the Forest Service from its inception. The detection of fires from lookouts



Figure 71. An Osborne fire-finder installed at PS Knoll lookout on the Apache-Sitgreaves National Forests.

placed at strategic locations on mountain tops became a major goal. Henry Graves (1910), Chief Forester, urged a concentrated effort at developing an improved fire detection system. The USFS at its Pacific Southwest Forest and Range Experiment Station in California supported research to develop an improved fire management system that included the construction of additional fire lookouts. The depression of the 1930s created a surplus of labor that was utilized through the CCC program to accomplish the construction of many new lookouts. Since that time, the Forest Service increasingly has devoted financial and research efforts to developing alternate means of detection including aerial patrols and automated devices.

The number of fire lookouts have been on the decline across the nation since the end of World War II. The Increased Manning Experiment in the late 1950s and early 1960s provided a brief respite. It is estimated that fifty percent of the lookouts constructed in the Southwestern Region between 1905 and 1941 are gone. Some have been moved to new locations, some have been lost to fire, but the majority have been razed and



Figure 72. Osborne fire-finder located at Kendrick lookout, Kaibab National Forest.

replaced by newer models, or the site was abandoned. In reviewing the site forms for this study, the notation "scheduled for removal" on a number of them indicated the continued decline of lookouts in the near future.

Conclusion

The Forest Service fire lookouts and their support structures are a thematic group related by historic context, architectural style and function. They reflect solutions to the problem of protective management of our national forests as developed by the USFS from efforts initiated by the conservation movement. This thematic group has additional significance because of its strong and direct association with the Great Depression and efforts of the federal government to provide economic relief through programs such as the CCC. The fire lookouts also represent a variety of architectural styles that evolved through time and culminated in the development of standardized plans for lookouts in the 1930s. These historical associations are common, in varying degrees, to all the properties in the thematic group. The nominated sites have local, state and national significance.

It is hoped that the results of this study can be used as a basis for the development of a management plan to protect and preserve these fire lookouts and their outbuildings. Most of the earliest lookout towers built prior to 1930 are gone and the remaining group (discussion to follow) represents an important nonrenewable historic resource that should be protected as an important example of the history and contributions of the Forest Service.

INVENTORY AND EVALUATION

The information presented in this section is based on the inventory conducted by the USDA - Forest Service during the summer of 1986. The survey recorded 101 fire lookout sites that have structures present. During the survey several lookout trees were noted, but little information was collected because that study focused only on structures.

As lookout trees represent the earliest surviving form of fire detection structure in the Southwestern Region, it is strongly recommended that they be recorded and photographed and that steps be taken to preserve and protect at least a sample of the surviving ones. Additionally, there may be some abandoned lookout sites that escaped this inventory.

Table 2 shows the 101 fire lookout locations arranged by National Forest and lookout type. It is readily apparent that Aermotor lookout towers represent the most common type (49%) by a single manufacturer in the Southwestern Region. The USDA - Forest Service CL-100 to CL-106 series, manufactured since the early 1950s, represent the next largest group (31%). The remainder (20%) is distributed between ten additional types.

Among the Aermotor Company towers, eight identifiable types are still represented in the Southwestern Region. The most common type is the MC-24 (N = 18), followed by the MC-39 (N = 10) and the LX-24 (N = 7). The remainder (N = 13) falls into five types (MC-99, MI-25, LL-25, MC-40 and LS-40).

Apache-Sitgreaves National Forests

The Apache and Sitgreaves National Forests are administered as one National Forest from a Supervisor's Office in Springerville, Arizona. The combined area of the two National Forests contains over two million acres in east-central Arizona. Part of the Black Mesa Forest Reserve (set aside on August 17, 1898) became the Apache National Forest on July 1, 1908. The Sitgreaves National Forest was created on July 1, 1908 from portions of the Black Mesa and Tonto National Forests. The Sitgreaves National Forest was named for Captain Lorenzo Sitgreaves, a government engineer, who conducted surveys throughout the area in the 1850s. The Apache National Forest is named for the Native American group that utilized the area from proto-historic times to the present. This forest has been an important timber producer, contains valuable water supplies and is utilized by stockmen and recreation visitors. The Apache-Sitgreaves contains 17 fire lookouts, the largest number of any National Forest surveyed in this study.

Greens Peak Lookout (Section 2, T8N R26E)

Located on the Springerville Ranger District, this 54 feet high steel tower has a 14 feet square steel cab (Figure 73). It was constructed in 1962, replacing an earlier Aermotor MC-24 previously erected in 1933. The present lookout represents a USDA - Forest Service standard plan CL-100 to CL-106 series, also known as an R-6 flat. The tower is not recommended for National Register eligibility since its construction date is too recent (less than 50 years old), it does not represent an exceptional type and its site integrity has been compromised by the intrusion of microwave towers.

Big Lake Lookout (Section 4, T5N R28E)

Located on the Springerville Ranger District, this 30 ft high steel tower has a wooden cab 12 feet square (Figure 74). This tower is an Aermotor Company MC-24 and it was constructed, probably by the CCC, in 1933. The Big Lake lookout was extensively remodeled in 1967, at which time the original wood frame windows were replaced by aluminum sliding windows. This lookout has lost its original integrity of design, materials and workmanship due to remodeling and is not recommended for National Register eligibility.

PS Knoll Lookout (Section 9, T4N R28E)

Located on the Alpine Ranger District, this 45 feet 9 inch high steel tower has a steel cab. This tower is an Aermotor Company MC-40 and was probably constructed by the CCC in 1933. The PS Knoll complex also includes a wood frame dwelling (Plan B-26) constructed in 1939, a wood frame storage shed (Plan B-6001) also constructed in 1939 and a wood frame privy (Plan U-10) constructed in 1940. Comparison with historic photographs taken in the early 1940s indicates that no remodeling has occurred on any of the structures at this site. The entire complex has retained its original integrity of design, construction, workmanship, materials, location,

Table 2
Fire Lookouts of the Southwestern Region

		APACHE SITGREAVES	CARSON	CIBOLA	COCONINO	CORONADO	GILA	KAIBAB	LINCOLN	PRESCOTT	SANTA FE	TONTO	TOTAL
AERMOTOR TOWER TYPES	MC-39	0	0	1	0	0	0	5	2	0	1	1	10
	LX-24	1	0	0	1	0	2	0	3	0	0	0	7
	MC-99	0	0	0	0	0	0	1	1	0	0	0	2
	MI-25	0	0	0	0	0	1	0	1	0	0	0	2
	MC-24	5	0	0	3	0	5	0	0	2	2	1	18
	LL-25	1	1	0	0	0	0	0	0	0	0	0	2
	MC-40	1	0	0	0	3	1	0	0	0	0	0	5
	LS-40	2	0	0	0	0	0	0	0	0	0	0	2
OTHER TOWER TYPES	CT-1	1	0	0	0	0	0	0	0	0	0	0	1
	CT-2	0	0	0	2	0	0	0	0	0	0	0	2
	Army	0	0	0	0	1	0	0	0	0	0	0	1
	L-4/L-5 House	0	1	0	0	5	0	0	0	1	1	0	8
	Pacific Coast Steel	0	0	0	1	0	0	0	0	3*	0	0	4*
	International Derrick	0	0	0	1	0	0	1	0	0	0	0	1
	Unknown	0	0	0	1	0	0	0	0	0	0	0	1
	Trailer	0	1	0	0	0	0	0	0	0	0	0	1
	CL-100/106	5	0	6	4	1	2	4	1	0	4	5	32
	Dwelling Only	0	1	0	0	0	0	0	0	0	0	0	1
	Number	16	3	7	12	10	13	10	9	6	8	7	101

* One of these may be a McLintock Marshall.



Figure 73. Greens Peak lookout (CL-100 series) on the Apache-Sitgreaves National Forests.

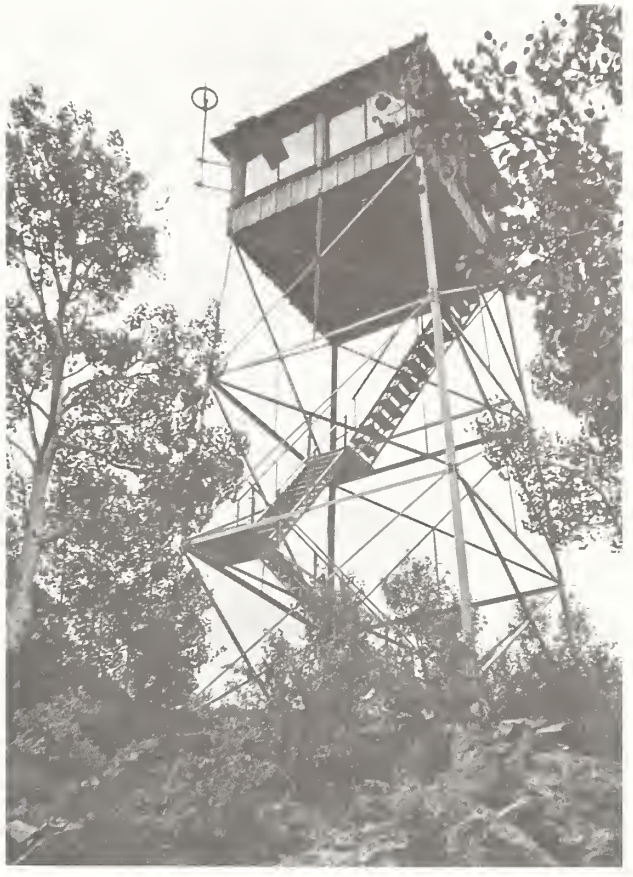


Figure 74. Big Lake lookout, Apache-Sitgreaves National Forests (Aermotor MC-24).

setting and association and is recommended for National Register eligibility (Figures 75 - 79).

Reno Lookout (Section 10, T3N R28E)

Located on the Alpine Ranger District, this USDA Forest Service, CL-100 to CL-106 type, 54 ft steel tower has a 14 ft by 14 ft steel cab (Figure 80). The lookout was constructed in 1965, replacing an earlier LX-25 Aermotor tower. The privy (Plan U-10) was constructed in 1965. Since this lookout was constructed less than 50 years ago and does not represent an exceptional type, it is not recommended for National Register eligibility.

Rose Peak Lookout (Section 17, T1N, R29E)

Located on the Clifton Ranger District, this Aermotor MC-24 type lookout is 30 feet high and had a wood cab 12 feet square. Constructed in 1929 to replace several earlier wooden platform towers, Rose Peak lookout underwent major structural alternations in 1981. The original MC-24 cab was replaced by a larger 14 feet square cab and the stairs were rebuilt (Figure 81). The dates on the cabin and storage shed are unknown. The privy (Plan U-10) was probably constructed in 1929. The lookout tower, due to the replacement of its original cab, has lost its integrity of construction, design, materials and workmanship and is not recommended for National Register eligibility.

Blue Lookout (Section 17, T1N R29E)

Located on the Alpine District, this 30 feet high MC-24 Aermotor steel tower has a 12 feet square wood cab. It was constructed in 1933, probably by the CCC. This lookout was extensively re-modeled in the 1960s. The windows and siding were altered from their original design (Figure 82). The lookout has lost its integrity of construction, design, workmanship and materials and is not recommended for National Register eligibility.



Figure 75. PS Knoll lookout built by the CCC in 1939 on the Apache-Sitgreaves National Forests. This is an Aermotor MC-40 type and is 45 feet tall. The view is looking to the south east.



Figure 76. PS Knoll lookout cabin built in 1939. This view is to the northwest.



Figure 77. PS Knoll lookout storage shed. Apache-Sitgreaves National Forests.



Figure 78. PS Knoll lookout storage shed (rear). Apache-Sitgreaves National Forests.



Figure 79. This privy at PS knoll lookout was built in 1940 to a standard plan.

Escudilla Lookout (Section 6, T6N R31E)

This 54 feet high steel tower is located on the Alpine Ranger District and was constructed in 1965 (Figure 83). With a 14 feet square steel cab, it represents a USDA Forest Service CL-100 to CL-106 standard plan type (R-6 flat). It replaced a MC-24 Aermotor tower built in 1933. The lookout complex also contains a new privy and storage shed built in the 1960s. The tower, less than 50 years old, does not represent an exceptional type and is not recommended for National Register eligibility.

Juniper Ridge Lookout (Section 14, T10N R20E)

This lookout represents the CL-100 standard plan type and was constructed in 1959. It is a 54 feet high steel tower with a 14 feet square steel cab (Figure 84). The privy was also constructed in 1959. The lookout, less than 50 years old, does not represent an exceptional type and is not recommended for National Register eligibility.

Bear Mountain Lookout (Section 4, T2N R31E)

This Aermotor MC-24 steel tower, located on the Alpine Ranger District, was constructed in 1933, probably by the CCC. It is 45 feet 9 inchs high and has a 7 feet square steel cab (Figure 85 - 94). The storage shed (an old cabin) was built in 1928. The present cabin and privy were built in 1940. There was an old wooden platform tower



Figure 80. Reno lookout, Apache-Sitgreaves National Forests (CL-100 series).



Figure 81. Rose Peak lookout and cabin on the Apache-Sitgreaves National Forests. The lookout is an Aermotor MC-24 constructed in 1929 and then altered in 1981.



Figure 82. Blue lookout (Aermotor MC-24), on the Apache-Sitgreaves National Forests.



Figure 83. Escudilla lookout, Apache-Sitgreaves National Forests (CL-100 series).



Figure 84. Juniper Ridge lookout, a CL-100 series, Apache-Sitgreaves National Forests.



Figure 85. Bear Mountain lookout (Aermotor MC-24) on Apache-Sitgreaves National Forests.



Figure 86. The Bear Mountain lookout cabins viewed from the lookout. The old cabin, in the foreground, was built in 1928 and is now used for storage.



Figure 87. The Bear Mountain lookout storage shed (original cabin), Apache-Sitgreaves National Forests.



Figure 88. Side view of the Bear Mountain lookout storage shed (original cabin), Apache-Sitgreaves National Forests.



Figure 89. Dovetail corner notching on the Bear Mountain lookout storage shed (original cabin).



Figure 90. The Bear Mountain lookout privy, Apache-Sitgreaves National Forests.



Figure 91. The "new" Bear Mountain lookout cabin, built in 1940.



Figure 92. Bear Mountain lookout's corral. This pretty scene recalls the days when horses provided the transportation to all of the Region's lookouts.

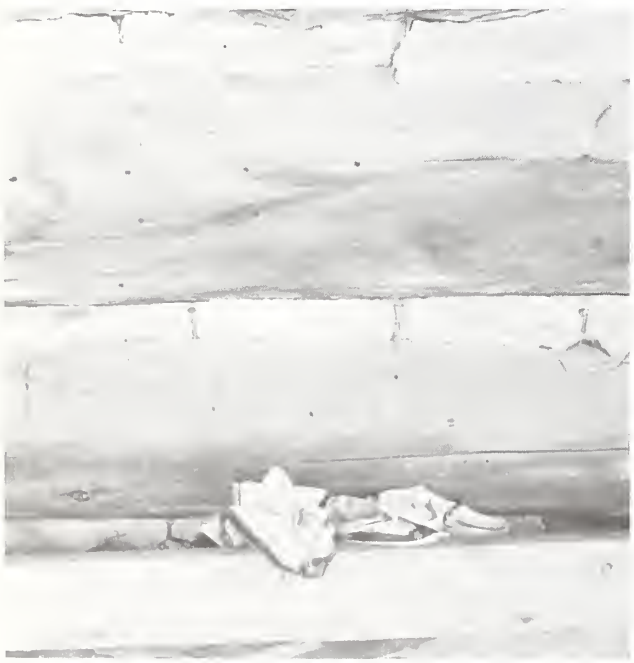


Figure 93. Graffiti on an interior wall showing the date of construction of the Bear Mountain lookout storage shed (original cabin).



Figure 94. Wrought iron door hardware on the Bear Mountain lookout storage shed (original cabin).

present at this location in the early 1920s. The lookout complex is located within a primitive area and is also the location of a prehistoric shrine site. The setting is evocative of the "early days" of the USFS according to the site's recorder. Comparison with historic photographs from the late 1930s indicates that this lookout has not undergone any significant structural change. The entire complex retains its original integrity of design, construction, workmanship, materials, setting, location and association and is recommended for National Register eligibility.

Springer Mountain Lookout (Section 30, T9N R23E)

Located on the Lakeside Ranger District, this 30 feet high MC-24 Aermotor steel tower was constructed in 1933, probably by the CCC. It has a 12 feet square wood cab. It underwent extensive remodeling in 1967, when all the original windows were replaced (Figure 95). It has lost its original integrity of design, construction, workmanship and materials and is not recommended for National Register eligibility.



Figure 95. The Springer Mountain lookout, an Aermotor MC-24, located on Apache-Sitgreaves National Forests.



Figure 96. Lake Mountain lookout and cabin, Apache-Sitgreaves National Forests (Aermotor LX-24).

Lake Mountain Lookout (Section 23, T9N R24E)

Located on the Lakeside Ranger District, this 48 feet high Aermotor LX-24 steel tower has a 7 feet square steel cab and was constructed in 1926. Study of historic photographs indicates that while the original ladder was replaced in the 1930s, the lookout and its associated cabin (also built in 1926) have retained their original integrity of design, construction, workmanship, materials, setting, location and association. The lookout complex is associated with the Los Burros Ranger Station site, which is already listed on the National Register. The entire lookout complex (Figures 96 - 97) at Lake Mountain is recommended for National Register eligibility.



Figure 97. Lake Mountain lookout cabin, built in 1926 on the Apache-Sitgreaves National Forests.

Gentry Lookout (Section 35, T11N R15E)

This 67 feet high steel tower is a standard plan CL-100 with a 14 feet square steel cab (Figure 98). It was built in 1965 on the Heber Ranger District. The privy, office and storage shed are all of recent construction. The lookout does not represent an exceptional type, is less then 50 years old and is not recommended for National Register eligibility.

Deer Springs Lookout (Section 34, T11N R14E)

This 50 feet high Aermotor LL-25 is located on the Heber Ranger District (Figures 99 - 101). The steel tower has a 7 feet square steel cab. It was built in 1923 and is the oldest lookout on the Apache-Sitgreaves National Forests. The associated cabin was built in 1923. The Aermotor LL-25 was not a common type; only two examples of this type exist today in the Southwestern Region. Examination of historic photographs from the early 1930s indicates only minor maintenance



Figure 98. Gentry lookout, a CL-100 type, on Heber Ranger District of the Apache-Sitgreaves.

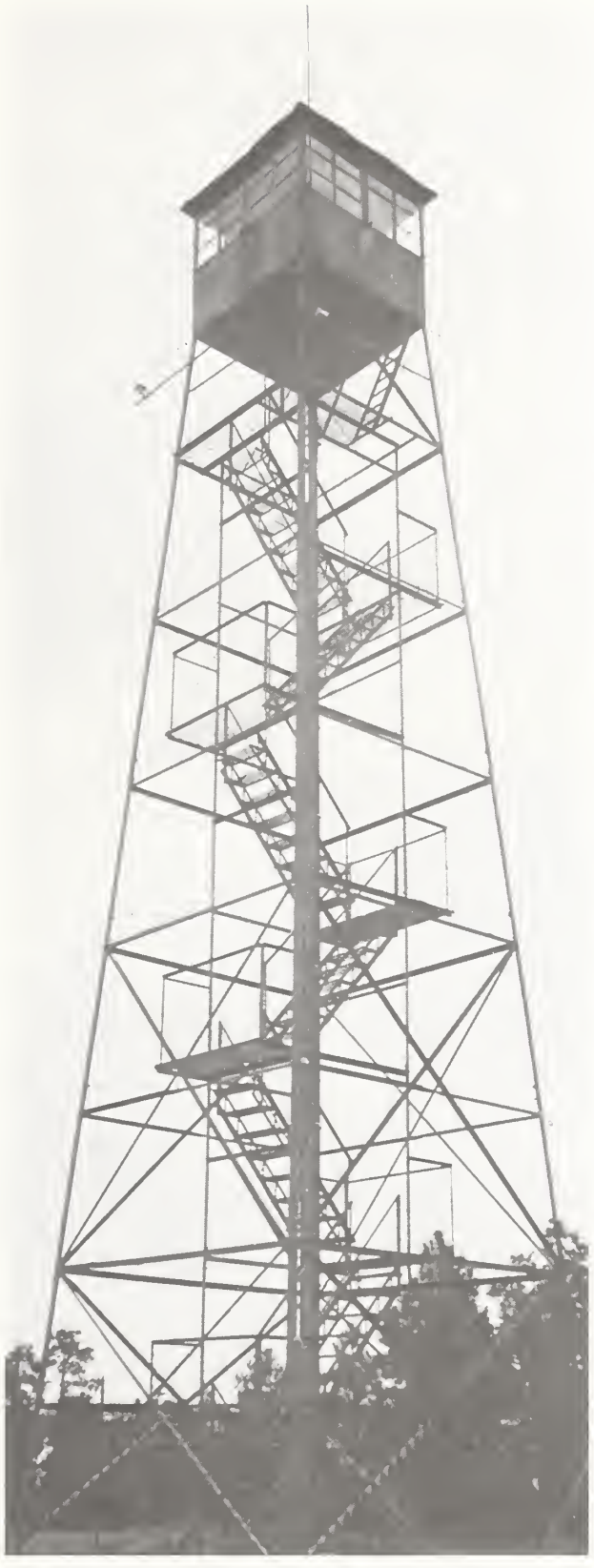


Figure 99. The Deer Springs lookout, an Aermotor LL-25; Apache-Sitgreaves National Forests. This 1923 tower is the oldest standing on the A/S.

modifications. The lookout tower and cabin, retaining their original integrity of design, construction, workmanship, materials, setting, location and association, represent a rare and unusual type. Both the lookout tower and cabin are recommended for listing on the National Register.



Figure 100. Deer Springs lookout cabin, Apache-Sitgreaves National Forests.



Figure 101. Deer Springs lookout cabin. Note the cistern at left and drains from the roof.

O'Haco Lookout (Section 10, T12N R12E)

Built in 1966, this 100 ft high Aermotor LS-40 has a 7 ft by 7 ft steel cab (Figure 102) and is located on the Chevelon Ranger District. This tower may represent one of the last Aermotor towers erected in the Southwestern Region as the Aermotor Company went out of business around this time. This tower has retained its integrity of design and construction; however, it is less than

50 years of age. It is not recommended for National Register eligibility.

Promontory Butte Lookout (Section 5, T11N R13E)

Located on the Chevelon Ranger District, this 110 feet high Aermotor LS-40 steel tower has a 7 feet square steel cab. It was erected in 1924 to replace a 110 feet high wooden platform built in 1913 (see Figure 13). The associated cabin and storage shed were also built in the early 1920s. When this tower was built in 1924, it was the highest in the country.

The original ladder was replaced with stairs in 1938. The interior paneling was whitewashed in 1966 and a decorative motif was burned in with local cattle brands. Examination of historic photographs from the 1920s indicates that this lookout and associated cabin have retained their original integrity of design, construction, workmanship, location, setting, association, and materials. The lookout and cabin (Figures 103 - 104) and storage shed are recommended for National Register eligibility.



Figure 102. O'Haco lookout, an Aermotor LS-40, on the Apache-Sitgreaves National Forests.



Figure 103. The Promontory Butte lookout, an Aermotor LS-40, Apache-Sitgreaves National Forests.



Figure 104. The cabin at Promontory Butte lookout was built in the early 1920s.

Dutch Joe Lookout (Section 27, T13N R13E)

This standard plan CT-1 wooden tower is 99 feet high and has a wooden cab 7 feet square. Located on private land at the edge of the Chevelon Ranger District, it was built in 1940, possibly by the CCC. It is the only example of the Standard Plan CT-1 in the Southwestern Region.

The cabin (B-16R) and the privy (U-10) were also built in 1940. A lookout tree is located nearby that was utilized prior to the construction of the tower in 1940. A study of historic photographs indicates no significant changes.

The lookout, its associated outbuildings (Figures 105 - 107) and lookout tree have all retained their original integrity of design, construction, workmanship, materials, location, setting and association. This lookout represents a rare and unusual type and should be preserved. The lookout should be rehabilitated so that its historic integrity is maintained. The lookout and cabin are recommended for National Register eligibility. However, as this lookout is located on private land, the owner of the property must be contacted in order to nominate it to the National Register. For this reason, the lookout is excluded from the thematic nomination.

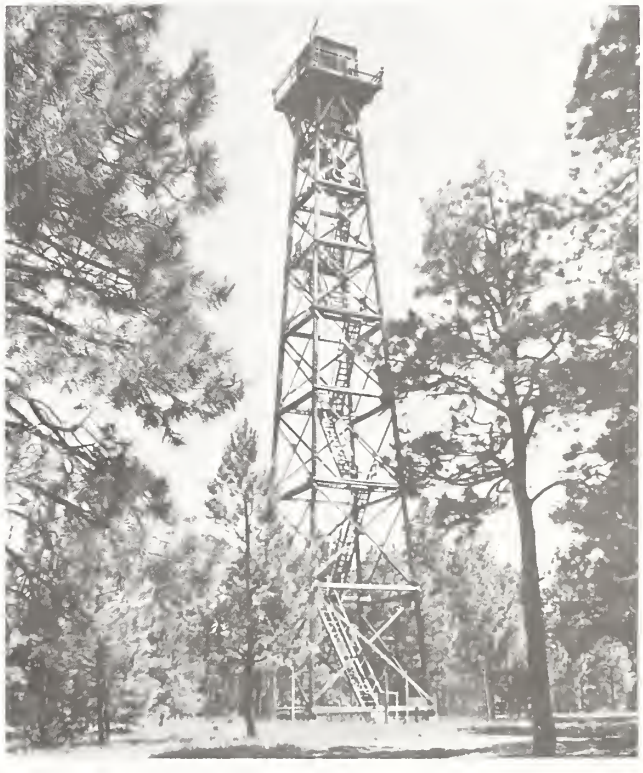


Figure 105. Dutch Joe lookout, a CT-1 (the only example of this type in the Southwestern Region), Apache-Sitgreaves National Forests. The site is privately owned.



Figure 106. The Dutch Joe lookout cabin, Apache-Sitgreaves National Forests.



Figure 107. A well-made chimney graces this end of the Dutch Joe lookout cabin.

Dutch Joe lookout is no longer regularly manned. The Forest Service has scheduled this lookout for replacement in 1988 or 1989. It is recommended that the Forest Service take some action to preserve and protect this rare lookout type. [Editor's Note: In 1989 this tower will have a lookout. The tower is hazardous so, a new one will be erected on nearby Forest land.]

Carson National Forest

Named for Kit Carson, the noted frontier explorer and scout, the Carson National Forest has its administrative headquarters at Taos, New Mexico. The Carson National Forest contains 1.3 million acres and was established on July 1, 1908. It was created by the consolidation of Taos Forest Reserve (1906) and part of the Jemez National Forest. Within its borders it contains the Sangre de Cristo Mountains, part of the Pecos Wilderness and many important prehistoric sites.

Canjilon Mountain Lookout (Section 13, T27N R5E)

Located on the Canjilon Ranger District, this site no longer has a lookout tower. It had a wooden tower with a platform that was abandoned in 1922 after several lightening strikes occurred, one of which killed the lookout guard in front of his family. The Canjilon District was established in 1909 and the lookout tower was constructed shortly after that date.



Figure 108. Canjilon lookout cabin built circa 1909 on the Carson National Forest.

The lookout's cabin remains at the site. It is wooden framed and measures 10 feet by 14 feet. The exterior was painted green; interior walls are painted half green and half white (Figures 108 and 109). The bunk bed, constructed of spruce poles, remains in the cabin. The interior and exterior walls are built of 1 inch by 6 inch rough lumber. There is a pitched tin roof topped with a bar which may have provided lightening protection. The cabin's foundation is cement.



Figure 109. Canjilon lookout house, Carson National Forest. This cabin is the oldest surviving structure in the Southwestern Region related to forest fire detection.



Figure 110. Picuris lookout commands a wide view from its windswept site on the Carson.



Figure 111. Picuris lookout house (type L-4) on Carson National Forest equipped with solar power.

All of the cabin's window glass is gone and the floor needs a few new boards. The door is missing. The walls are in fairly good condition although covered with graffiti. This lookout cabin is the oldest, standing fire detection structure in the Southwestern Region (some lookout trees may be older).

The cabin has retained its original integrity of design, construction, workmanship, materials, setting, location and association and is recommended for National Register eligibility. It is also recommended that the Forest Service prevent further deterioration of this significant structure by replacing the window glass and door.

Picuris Lookout (Section 10, T23N R12E)

This L-4 type lookout house was constructed on Penasco Ranger District between 1928 and 1932 (Figures 110 and 111). The house is a wood-frame construction, measures 12 feet square and rests on a stone and cement foundation. The roof has wood shingles and solar panels were installed in 1982 and 1984. The interior ceiling was replaced and new windows were installed in 1981. Considerable structural changes have been made: the lookout house does not retain its original integrity of design, construction, workmanship and materials. National Register eligibility is not recommended.

Kiowa Lookout (Section 4, T27N R8E)

Located on the El Rito Ranger District (Figures 112 and 113), this 50 foot tall steel tower has a steel cab 7 feet square and was erected in 1923. The type is an Aermotor LL-25, one of two surviving lookouts of this type in the Southwestern Region (the other being the Deer Springs lookout on the Apache-Sitgreaves National Forest). The lookout has undergone some modification at unknown dates. The original ladder was replaced by stairs, the interior has been rebuilt with new windows, ceiling and trap door. This lookout has recently been vandalized and is no longer used. The modifications have been extensive and the original integrity of design, construction, workmanship and materials has been lost. Documentation on the cabin, built

in 1935, was insufficient to properly assess the current condition and extent of modifications. Therefore, there is not adequate data at this time to make a recommendation regarding National Register eligibility.



Figure 112. Kiowa lookout, an Aermotor LL-25, on the Carson National Forest.



Figure 113. The Kiowa lookout cabin, Carson National Forest.

Cibola National Forest

Named for the imaginary city of gold sought by Francisco Coronado in the sixteenth century, the Cibola National Forest (with over one million acres of land) contains many important historic and prehistoric cultural resource sites. The Mount Taylor area contains important obsidian deposits quarried by prehistoric peoples over thousands of years. Mt. Taylor obsidian has been identified at Hohokam sites in the Tucson Basin.

The Cibola National Forest has an administrative history dating to the establishment of Mt. Taylor Forest Reserve, San Mateo Forest Reserve, the Magdalena Forest Reserve and the Manzano Forest Reserve in 1906. The Datil Forest Reserve was created in 1908. The Cibola National Forest emerged as a distinct administrative entity on December 3, 1931 when the name of the Manzano National Forest was changed to Cibola and a portion of the Datil National Forest was transferred to the Cibola.

Capilla Lookout (Section 34, T6N R5W)

Located on the Mountainair Ranger District, this

is a Standard Plan CL-100 to CL-106 series (Figure 114). Its 14 feet square steel cab rests on a concrete block base 10 feet high. It was erected by the Forest Service in 1963, replacing a L-4 lookout house erected in 1927. The lookout is less than 50 years old, does not represent an exceptional type and is not recommended for National Register eligibility.



Figure 114. Capilla lookout, a CL-100 type built in 1963 on the Cibola National Forest.

Withington Lookout (Section 8, T5S R6W)

This lookout, erected in 1952, represents a USDA Forest Service Standard Plan CL-100 to CL-106 series type. It measures 14 feet square (Figure 115) and the cab rests on a concrete blockhouse base 10 feet high. It is located on the Magdalena Ranger District. This lookout replaced an earlier D-6 cupola lookout house which was built in 1934 and demolished in 1952. The present lookout, less than 50 years old, does not represent an exceptional type, and is not recommended for National Register eligibility.

McGaffey Lookout (Section 14, T13N R16W)

This lookout (Figure 116), located on the Mt. Taylor Ranger District, was erected in 1965. It is a USDA Forest Service Standard Plan CL-100 to CL-106 series type, with a 14 feet square steel



Figure 115. Withington lookout (built in 1952), another CL-100, on the Cibola National Forest.



Figure 116. McGaffey lookout, Mt. Taylor Ranger District, Cibola National Forest.

cab resting on a steel tower 54 feet high. It replaced two earlier towers, a wooden tower built in the 1920s and an Aermotor MC-39 built in 1934. The McGaffey lookout, less than 50 years old, does not represent an exceptional type and is not recommended for National Registry eligibility.

Grassy Lookout (Section 16, T6S R6W)

Located on the Magdalena Ranger District and erected in 1960, this lookout represents a USDA Forest Service, CL-100 to CL-106 series type. The steel cab measures 14 feet square and sits on a 10 feet high concrete block base (Figure 117). Since it is less than 50 years of age and does not represent an exceptional type, it is not recommended for National Registry eligibility.



Figure 117. Grassy lookout, Magdalena Ranger District, Cibola National Forest.

Oso Ridge Lookout (Section 4, T9N R12W)

Constructed in 1965 on the Mount Taylor Ranger District, this lookout consists of a 14 feet square steel cab on a concrete blockhouse base 10 feet high. It is a USDA Forest Service Standard Plan CL-100 to CL-106 series type, also known as an R-6 flat (Figure 118). It replaced an earlier 7 feet by 7 feet wood cab on a 25 feet steel tower constructed in 1938. Since this lookout is less than 50 years old and represents an unexceptional type, it is not recommended for National Register eligibility.

Cedro Lookout (Section 36, T10N R5E)

This lookout is located on the Sandia Ranger District and was constructed in 1969 by ATT for the Forest Service (Figure 119). It appears to be an Aermotor MC-39 tower that may have been moved from some other location. There are many intrusions at this site and the other outbuildings are all privately owned. The manufacturer of the steel cab and stairs is identified as the Braden Steel Corporation (no information was available on this company). Less than 50 years old, this lookout does not appear



Figure 118. Oso Ridge lookout, a 1958 version of the CL-100 series on Cibola National Forest.

to represent an exceptional type and is not recommended for National Registry eligibility.

Davenport Lookout (Section 29, T1N R10W)

Davenport is located on the Magdalena Ranger District and was constructed in 1954 (Figure 120). This lookout consists of the standard CL-100 to CL-106 series configuration; a 14 feet square steel cab on a concrete blockhouse base 10 feet high. There are several private communications towers that intrude on this site. This lookout is less than 50 years old and does not represent an exceptional type. It is not recommended for National Registry eligibility.



Figure 119. Cedro lookout, built to standard plan MC-39-AE in 1969.



Figure 120. Davenport lookout, Magdalena Ranger District, Cibola National Forest.

Coconino National Forest

The Coconino National Forest consists of 1.8 million acres in the Arizona mountain country around Flagstaff. There are extensive ponderosa pine forests, mountain lakes and many deep canyons. The Coconino stretches from Camp Verde in the south to the San Francisco Mountains in the north and to Mormon Lake in the west.

Arizona's tallest mountains (Humphrey, Agassiz, Fremont and Doyle), the San Francisco Peaks, are all located on the Coconino National Forest. The Forest supports extensive timbering, grazing and recreation.

The San Francisco Mountains Forest Reserve was established on August 17, 1898. On July 2, 1908, the Coconino National Forest was established from the San Francisco Mountains Reserve and parts of the Black Mesa, Tonto and Grand Canyon Forest Reserves.

Moqui Lookout (Section 27, T14N R11E)

Located on the Blue Ridge Ranger District, this lookout was constructed in 1952 (Figures 121 - 123). It is built to a USDA Forest Service Standard Plan CL-100 to CL-106 series type. The steel cab measures 14 feet square and sits on an 83 feet high, v-brace, steel tower. This is the tallest lookout on the Coconino National Forest. It replaced an Aermotor tower built in 1930. The lookout tower is less than 50 years old, does not represent an exceptional type and is not recommended for National Register eligibility.

The Moqui cabin, constructed in 1932, sits on a rock masonry foundation. It is of wooden-frame construction with 2 by 8 joists, 1 by 4 decking, 2 by 4 wood rafters, 1 by 3 inch bevel siding and a corrugated steel roof. Comparisons of historic photographs indicate that the cabin has experienced only minor maintenance modification over the years. This cabin was built to provide living quarters for the fire guard who manned the early Aermotor tower at this site. The cabin has retained its original integrity of design and construction and is recommended for National Register eligibility.

East Pocket Lookout (Section 6, T18N R6E)

Located on the Flagstaff Ranger District, this USDA Forest Service CT-2 type Region 6 tower was constructed in 1943 (Figure 124). It is



Figure 121. The Moqui lookout, Coconino National Forest (CL-100 series), the tallest tower on this forest.



Figure 122. The Moqui lookout's storage shed, Coconino National Forest.



Figure 123. Cabin at Moqui lookout, Coconino National Forest.

"TECO-connected" (a trade name given to a metal coupling unit which allowed for the rapid and strong attachment of wooden structural units to other wooden units; designed and developed by the Timber Engineer Corporation of America). The L-4 lookout cab measures 14 feet square and sits on a 30 feet high, x-brace, wooden tower. It was probably constructed of wood due to a World War II steel shortage. The tower was fabricated by the Geeson Brothers Company.

Comparisons with historic photographs indicate window replacement. The CT-2 type lookout is represented by only two examples still extant in

the Southwestern Region. Although there has been some loss of integrity due to window replacement, the lookout retains much of its integrity of design, construction, workmanship and materials and represents an exceptional type for the Southwestern Region. However, because it is less than 50 years old, it is not recommended for National Register eligibility.



Figure 124. East Pocket lookout, Coconino National Forest (CT-2 type).

Apache Maid (Section 31, T16N R8E)

This lookout, located on the Beaver Creek Ranger District, was erected in 1961. It is 30 feet tall and represents a USDA Forest Service Standard Plan CL-100 to CL-106 series type, also known as an R-6 flat (Figure 125). The steel cab measures 14 feet square. The lookout was built by Martin Cline of Globe, Arizona. The steel utility building was also built in 1961. This lookout, less than 50 years old, does not represent an exceptional type and is not recommended for National Register eligibility.



Figure 125. Apache Maid lookout, Coconino National Forest (CL-100 series).

Woody Mountain Lookout (Section 3, T20N R6E)

Located on the Flagstaff Ranger District, this 46 feet high tower with a steel cab 7 feet square was designed by the Pacific Coast Steel Company and erected by Charles Lochman and his CCC crew in 1936. This mountain had one of the two original lookout sites on the Coconino National Forest. From 1910 to 1921, fire guards climbed a lookout tree to detect fires. A wooden tower was built in 1922 and it was replaced by the present structure (Figures 126 and 127) in 1936.

On 22 September 1986, the Flagstaff District of the Coconino National Forest held a ceremony to celebrate the fiftieth anniversary of the construction of Woody Mountain lookout. Former lookout personnel who had worked there were invited to the ceremony to witness the presentation of a bronze plaque which reads:

> Dedicated to the men and women who have served since 1910 at Woody Mountain Lookout and to Charles Lochman who in 1936 supervised the construction of this tower.

There has been no major structural modification to this tower over the last 50 years. The lookout tower retains its original integrity of design, structure, location, workmanship and materials; represents an exceptional type; and is over 50 years of age. It is recommended for National Register eligibility.

Mormon Lake Lookout (Section 23, T17N R9E)

This lookout is located on the Mormon Lake Ranger District and was erected in 1927. The steel tower is 50 feet high and has a steel cab 7 feet square. It is an Aermotor LX-24 type which replaced a 1915 wooden tower. The associated wood frame cabin was built in 1928 (Figures 128 and 129).

The interior of the cabin was constructed using 2 by 4 inch studs, while the siding is shiplap pine. Study of historic photographs indicates that modification of the original windows in the tower has occurred; the cabin has experienced no major modifications. The cabin is a standard plan similar to the cabin at the East Pocket lookout. The lookout tower has lost its original integrity of design, construction, workmanship and materials due to the window replacement. The lookout tower is not recommended for National Register eligibility. The lookout cabin has retained these integrity factors and is recommended for National Register eligibility.

Baker Butte Lookout (Section 2, T12N R9E)

Located on the Long Valley Ranger District, this 30 feet high Aermotor MC-24 Tower has a steel cab



Figure 126. Woody Mountain lookout (designed by Pacific Coast Steel) on Coconino National Forest.



Figure 127. Woody Mountain lookout, Coconino National Forest (showing details of the cab).



Figure 129. Mormon Lake lookout cabin, Coconino National Forest.



Figure 128. Mormon Lake lookout, an Aermotor LX-24, on the Coconino National Forest.



Figure 130. Baker Butte lookout, a 30 feet tall Aermotor MC-24, on Coconino National Forest.



Figure 131. Baker Butte lookout cabin was built in 1930 and one room was added in 1946.

12 feet square. It was erected in 1937 by a CCC crew. This tower replaced an early wooden tower built in 1922. The wooden frame cabin was built in 1930. One room was added in 1946. Both the lookout tower and cabin (Figures 130 - 131) have experienced extensive modifications and have lost their original integrity of design, construction, workmanship and materials. They are not recommended for National Register eligibility.

Buck Mountain Lookout (Section 20, T15N R9E)

Located on the Long Valley Ranger District, this CT-2 wooden, x-brace, tower is 30 feet high and has a 14 feet by 14 feet L-4 wooden cab on top (Figure 132). It was built in 1939, probably by a CCC crew. The steps were slightly altered in 1953. The timbers were treated for preservation



Figure 132. Buck Mountain lookout, one of only two examples of the CT-2 type, both on the Coconino.

in 1967 and the roof was given new shingles in 1983. This represents the best example of a surviving CT-2 type tower in the Southwestern Region. The only other CT-2 type is East Pocket Lookout (compare with Figure 124), also on the Coconino National Forest. Historic photographs indicate that Buck Mountain lookout has retained its integrity of original design, construction, workmanship, materials and location. The Lookout tower is 48 years old, but falls within the 1941 cutoff date for this historical period. It represents an exceptional type and is recommended as eligible for the National Register.

Hutch Mountain Lookout (Section 3, T16N R9E)

This Aermotor MC-24 tower (Figure 133) stands 48 feet high and has a cab 12 feet square. It was built by a CCC crew in 1936. It is located on the Long Valley Ranger District. This lookout tower replaced a wooden tower built in the early 1920s. The windows have been replaced and the tower has lost its integrity of design, construction, materials and workmanship. It is not recommended for National Register eligibility.



Figure 133. Hutch Mountain lookout, a 48 feet tall Aermotor MC-24 built in 1936.

Lee Butte Lookout (Section 22, T17N R8E)

This 45 feet 9 inch high steel tower with a 7 ft by 7 ft steel cab is located on the Mormon Lake Ranger District and was built in 1933. It



Figure 134. Lee Butte lookout, an International Derrick type built in 1933 on the Coconino.



Figure 135. Lee Butte lookout's cabin, viewed to the Southwest, on Mormon Lake Ranger District.

represents the only example of an International Derrick and Equipment Company steel tower in the Southwestern Region (Figures 134 and 135). The accompanying wood-frame cabin was also built in 1933. Historical photographs indicate that no major modifications have occurred to either the lookout tower or the cab. Both the tower and cabin are more than 50 years old and retain integrity of original design, construction, location, materials and workmanship and both are recommended for National Register eligibility.

Turkey Butte Lookout (Section 18, T19N R5E)

This Aermotor MC-24 steel tower is 30 feet high and has a steel cab 12 feet square (Figure 136). It is located on the Flagstaff Ranger District and was erected in 1937 by Vince Purtle and his CCC crew. The cabin was constructed in 1984 replacing an earlier 1943 cabin. Extensive modifications have been made to the windows and the tower has lost its integrity of original design and construction and is not recommended for National Register eligibility.



Figure 136. Turkey Butte lookout, an Aermotor MC-24 erected by the CCC in 1937.

O'Leary Lookout (Section 3, T23N R8E)

This lookout, a USDA Forest Service Standard Plan CL-100 to CL-106 series was erected in 1959 by Martin C. Cline of Globe, Arizona. It is located on the Elden Ranger District. The tower is 30 feet high and has a steel cab 14 feet square. Less than 50 years old, this tower does not represent an exceptional type and is not recommended for National Register eligibility.

Elden Lookout (Section 36, T22N R7E)

This tower is located on the Elden Ranger District and was erected in 1977. The type is unknown. The site form was incomplete and photographs were not supplied by the Forest prior to the end of this research. However, the tower is too recent to be considered for National Register eligibility.

Coronado National Forest

The Coronado National Forest includes over 1.2 million acres of predominantly mountainous terrain within the basin and range country of southeastern Arizona. The region is characterized by isolated mountain ranges that rise from the savannahs. Some peaks reach over 9000 feet in elevation.

The Coronado National Forest has a complex administrative history. In November of 1906, the Baboquivari, Huachuca and Tumacacori Forest Reserves were created. These three forests were consolidated into the Garces National Forest in 1908. In 1902, the Santa Rita and Santa Catalina Forest Reserves were created. In 1907, the Dragoon National Forest was created. On July 2, 1908, the Santa Rita, Santa Catalina and Dragoon National Forests were consolidated under the name of the Coronado National Forest, with Garces National Forest added in 1911.

Atascosa Lookout (Section 18, T23S R12E)

This lookout house is located on the Nogales Ranger District and was erected in 1930 or 1933 by the Forest Service. The lookout is no longer being used as a fire detection facility but is now a rest area for hikers; it is accessible by trail only. This lookout is an L-4 type wooden house with dimensions of 14 feet by 14 feet (Figure 137). Historic photographs indicate that there has been minimal modification since 1933. The associated outhouse and stone cistern were also built in 1933 and exhibit no apparent modification. This lookout house, as well as the cistern and outhouse, have retained their integrity of original design, construction,



Figure 137. Atascosa lookout, an L-4 house, was built circa 1933. Note the cistern at the left. This site is no longer in use as a lookout for the Coronado National Forest

workmanship, materials, setting, location and association and are recommended for National Register eligibility.

Barfoot Lookout (Section 33, T17S R30E)

Barfoot lookout is located on the Douglas Ranger District and was built in 1935, possibly by a CCC crew. The lookout house is an L-4 type wooden house measuring 14 feet square. This complex also includes a wooden frame shed, outhouse, concrete cistern and an attractive, rustic style native stone retaining wall (Figures 138 - 141). The lookout complex represents one of the best examples of its type in the Southwestern Region.

Study of historic photographs indicates no major modifications have occurred to any of the structures at this complex. The lookout house and other structures have all retained their integrity of original design, construction, workmanship, materials, setting, location and association and the entire complex at Barfoot is recommended for National Register eligibility.



Figure 138. Barfoot lookout, an L-4 house type, on the Coronado National Forest.



Figure 139. Barfoot lookout house's stone retaining wall and windsock bracket.



Figure 140. Storage shed at Barfoot lookout on the Coronado National Forest.

Mount Bigelow Lookout (Section 4, T12N R16E)

This 60 feet high steel tower with a steel cab 14 feet square. It is located on the Santa Catalina Ranger District and was erected in 1958 to replace an earlier Aermotor tower. The lookout is now used only during emergency conditions.



Figure 141. Barfoot lookout's privy.

The lookout tower is an army type (Figure 142) for which information is unavailable although it closely resembles the Standard Plan CL-100 to CL-106 series. The lookout, less than 50 years old, does not appear to represent an exceptional type and is not recommended for National Register eligibility.

Lemmon Rock Lookout (Section 35, T11S R15E)

This L-4 type, a 14 feet square wooden frame lookout house, was erected in 1928 (Figure 143). It is located on the Santa Catalina Ranger District. It is the second oldest lookout on the Coronado National Forest. There have been no intrusions at this site. The lookout is situated on a rock bluff, accessible only by trail. Study of historic photographs indicates that there have been no major modifications to the Lemmon Rock lookout house. This lookout is over 50 years old and retains its integrity of original design, construction, materials, workmanship, setting, location and association and is recommended for National Register eligibility.

22nd Year As A Fire Lookout

According to the Tucson Daily Citizen, A. T. Johnson is now spending his 22nd consecutive year as a fire lookout at Barfoot Peak in the Chiracahua Mountains on the Coronado National Forest. This consecutive service as fire lookout on one individual lookout exceeds any other record in Region Three and possibly in the United States.

The Forest Pioneer, 2nd Quarter 1940 (p. 3)



Figure 142. Mount Bigelow lookout on Coronado National Forest (army plan).



Figure 143. Lemmon Rock lookout, an L-4 house, Coronado National Forest.

Webb Peak (Section 30, T8S R24E)

Located on the Safford Ranger District, this Aermotor MC-40 steel tower is approximately 45 feet high. It has a steel cab 7 feet square (Figures 144 and 145). It was erected in 1933, possibly by a CCC crew. The original living quarters cabin was removed in 1968 and replaced by a modern structure. Historic photographs indicate that no major structural changes have occurred to the lookout tower since it was erected. This lookout is over 50 years old, retains its integrity or original design, construction, workmanship, materials, setting, location and association and is recommended for National Register eligibility.



Figure 144. Webb Peak lookout, an Aermotor MC-40, on the Coronado National Forest.



Figure 145. Details of bracing on the Coronado's Webb Peak lookout tower.



Figure 146. West Peak lookout, another Aermotor MC-40, Coronado National Forest.



Figure 147. The cab on the Coronado's West Peak lookout (Aermotor MC-40).

West Peak Lookout (Section 18, T8S R23E)

Located on the Safford Ranger District, this 45 feet high Aermotor MC-40 steel lookout tower has a steel cab 7 feet square (Figures 146 - 148). It was erected in 1933 by a CCC crew. The original log cabin associated with this lookout was removed in 1959. Study of historic photographs reveals that no major structural changes have occurred to the tower. This lookout is over 50 years of age, retains its integrity of original design, construction, workmanship, materials, setting, location and association and is recommended for National Register eligibility.

Heliograph Lookout (Section 13, T9S R24E)

This 99 feet high steel tower lookout is an Aermotor MC-40 with a 7 feet by 7 feet steel cab. Located on the Safford Ranger District, it was erected by a CCC crew in 1933. This lookout tower is the highest one on the Coronado National Forest. The log cabin and wood frame barn were also constructed in 1933. A room was added to the cabin in 1978 in keeping with the rustic style.

With the exception of the room addition to the cabin, the lookout tower and the other structures at this site have retained their integrity of



Figure 148. A rain gauge and weather station at West Peak lookout, Coronado National Forest.



Figure 149. Heliograph lookout's cabin was built in the rustic style in 1933.



Figure 150. Heliograph lookout (Aermotor MC-40) and cabin, Coronado National Forest.



Figure 151. Heliograph lookout's privy, Coronado National Forest.

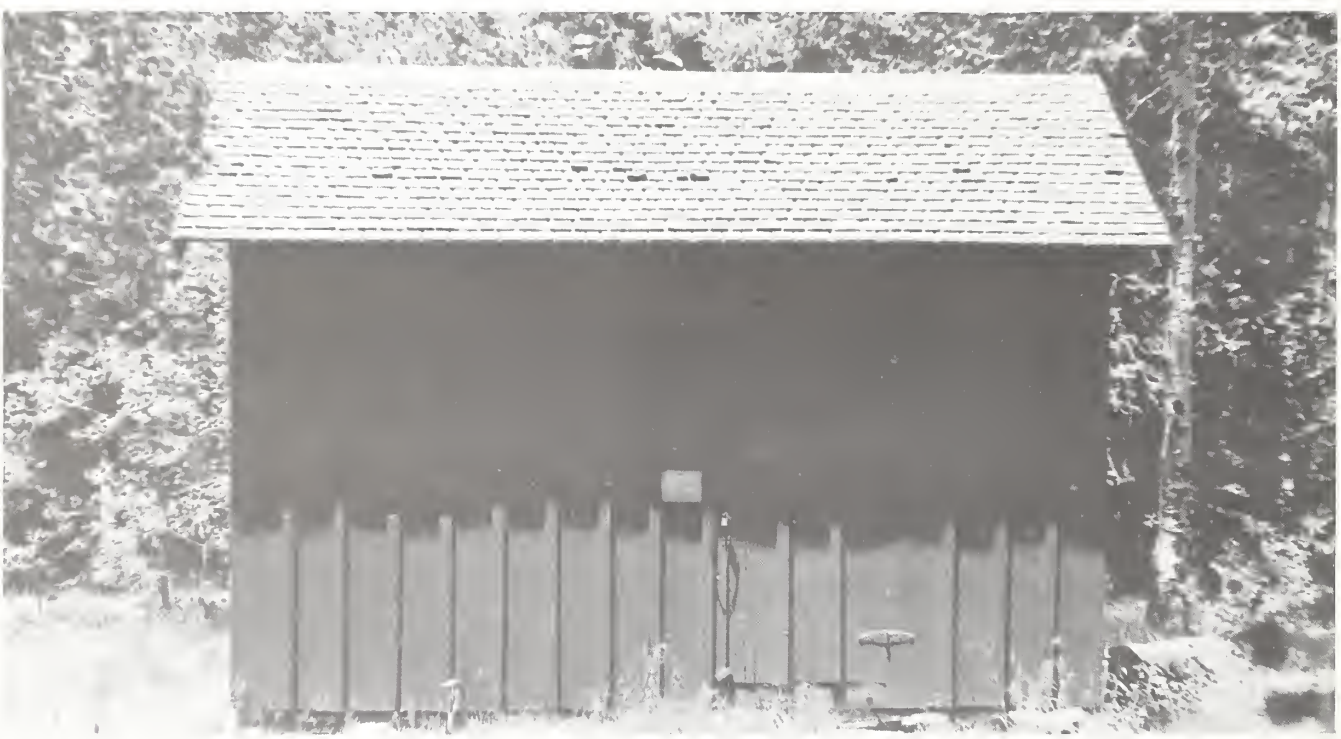


Figure 152. The barn at Heliograph lookout, Coronado National Forest, was built in 1933.

design, construction, workmanship, materials, setting, location and association. All of the Heliograph structures (Figures 149 - 152) are over 50 years old and the entire complex is recommended for National Register eligibility.

Miller Peak Lookout (Section 34, T23S R20E)

Located on the Patagonia Ranger District, this lookout (Figure 153) was erected in 1926. The wooden frame lookout house is an L-4 type and measures 14 feet square. Although no historic photographs were located for this lookout, it appears that major structural modifications have occurred, including changes to the roof, windows and sidings. The lookout house does not retain its integrity of original design, construction, workmanship and materials and is not recommended for National Register status.



Figure 153. Miller Peak lookout, an L-4 house built in 1926 for the Coronado National Forest.

Monte Vista Lookout (Section 32, T18S R30E)

This lookout, erected in 1966, is a USDA Forest Service Standard Plan CL-100 to CL-106 series type. It is located on the Douglas Ranger District. The tower is a steel tower 41 feet high with a steel cab 14 feet square. This lookout replaced an earlier Aermotor tower erected in 1922 or 1923. The log cabin (Figures 154 and 155) with dovetail notching was built in the early 1930s, probably by the CCC. The cabin is in excellent condition and has retained its integrity of original design, construction, workmanship, materials, location, setting and association. The cabin is recommended for National Register eligibility.



Figure 154. Monte Vista lookout cabin, on the Coronado's Douglas Ranger District.



Figure 155. The rear elevation of Monte Vista's lookout cabin, Coronado National Forest.

Silver Peak Lookout (Section 32, T27S R31E)

This lookout house, an L-4 type located on the Douglas Ranger District, was erected in 1938, perhaps by a CCC crew. It is situated on top of a rocky knob (Figure 156). This wood frame construction measures 14 feet square. There are several associated buildings (Figures 157 and 158) including an outhouse and storage shed, both are wood frame construction with tongue and groove exterior. There also is a water cistern (Figure 159) with a catchment drain extending from the roof of the lookout house.

This lookout complex has suffered no modern intrusion and has retained remarkable integrity

of original design, construction, workmanship, materials, location, setting and association. The entire complex is recommended for National Register eligibility.



Figure 156. Silver Peak lookout, an L-4 house, built in 1938 on the Coronado National Forest.



Figure 157. Silver Peak lookout privy, Coronado National Forest



Figure 158. Silver Peak lookout storage shed, Coronado National Forest



Figure 159. Silver Peak lookout and its cistern, Douglas Ranger District, Coronado National Forest.

Gila National Forest

The Gila National Forest encompasses over three million acres of forest and range land in southwestern New Mexico. The Gila Forest Reserve was created on March 2, 1899. The Big Burros Forest Reserve was created on February 6, 1907. On June 18, 1908 the Big Burros and Gila Reserves were consolidated to form the Gila National Forest. In 1931 a portion of the Datil National Forest was added to the Gila National Forest. The Gila Wilderness area, the first in the United States, was established in 1924 and lies within the forest boundary. The mountain ranges in the Gila National Forest include the Mogollons, the Tularosas, the Diablos and the Black Range. Important resources of this National Forest include timber, water, forage for grazing and many recreation areas.

Eagle Peak (Section 22, T7S R17W)

Located on the Reserve Ranger District, this USDA Forest Service Standard Plan CL-100 to CL-106 series type was erected in 1955. Its 14 feet square steel cab rests on a concrete blockhouse base 10 feet high (Figure 160). It replaced an earlier tower built in 1929. This lookout is less than 50 years old, does not represent an exceptional type and is not recommended for National Register eligibility.



Figure 160. Eagle Peak lookout (CL-100 series), Gila National Forest.

Mogollon Baldy Lookout (Section 10, T12S R17W)

Located on the Wilderness Ranger District, this 30 feet high Aermotor MI-25 steel tower has a wooden cab 14 feet square. The lookout was built in 1948 on a location which has been utilized for fire detection since at least 1913 when fires were located with a protractor on top of a stump. A wooden tower was built in 1917 and the top of the platform was enclosed in 1921. The wooden tower was then replaced by the present steel tower. Adjacent to the lookout tower is a log cabin built in 1923 (Figures 161 and 162).

Study of historic photographs indicates that no major structural changes have occurred to either building. The tower represents a rare and exceptional type of Aermotor tower. Only two MI-25 type towers have survived in the Southwestern Region; the other being on the Lincoln National Forest. However, the tower is less than 50 years old and does not fall within the 1941 cut off date, so it is not recommended for National Register eligibility. The cabin retains excellent integrity of original design, construction, workmanship, materials and setting and it is recommended for National Register eligibility.



Figure 161. Mogollon Baldy lookout tower, an Aermotor MI-25, and cabin (built in 1923) on the Gila.



Figure 162. The cab of Mogollon Baldy lookout, an Aermotor MI-25, on the Gila National Forest.

Fox Mountain Lookout (Section 3, T3S R18W)

Located on the Quemado Ranger District, this lookout was erected in 1959. It is a USDA Forest Service Standard Plan CL-100 to CL-106 series type. It has a steel cab 14 feet square on a 10 feet high concrete blockhouse (Figure 163). The lookout is less than 50 years old, does not represent an exceptional type and is not recommended for National Register eligibility.



Figure 163. Fox Mountain lookout (CL-100 series), Gila National Forest.

Mangas Mountain Lookout (Section 16, T3S R14W)

Located on the Quemado Ranger District, this lookout tower was erected in 1934. It is an Aermotor MC-24. There is a 14 feet square steel cab on a steel tower 30 feet high. The wooden frame cabin was erected in 1934. The lookout tower and cabin (Figures 164 - 166) show few modifications over time and appear to retain much of the integrity of the original design, construction, workmanship, materials, setting, location and association. The tower and cabin are over 50 years old and are recommended for National Register eligibility. This tower was previously recommended for eligibility by the New Mexico State Historic Preservation Office.



Figure 164. Mangas Mountain lookout, an Aermotor MC-24 type, on the Gila National Forest.



Figure 165. The cab of Mangas Mountain lookout (Aermotor MC-24), Gila National Forest.



Figure 166. Mangas Mountain lookout's cabin, Gila National Forest.

Saddle Mountain Lookout (Section 15, T8S R21W)

This lookout is located on the Luna Ranger District and was erected in 1933 (Figure 167). The original lookout was an Aermotor MC-24 type, but the cab was replaced in 1966 by a USDA Forest Service Standard Plan CL-100 to CL-106, 14 feet square steel cab. All of the other outbuildings are of recent construction. This tower has been extensively modified and has lost its integrity of original design and construction. It is not recommended for National Register eligibility.

Reeds Peak Lookout (Section 23, T13S R10W)

Located on the Mimbres Ranger District, Reeds Peak has a 48 feet high Aermotor LX-24 steel tower (Figures 168 and 169). The steel cab is 7



Figure 167. Saddle Mountain lookout, a CL-100 series cab on a Aermotor MC-24 tower, on the Gila.

feet square and was erected in 1929. New stairs were added in 1965, but the original ladder is still in place. The original cabin was replaced in 1959. This lookout retains its integrity of original design, construction, workmanship, materials, setting, location and association and is over 50 years old. It is recommended for National Register eligibility.



Figure 168. Reeds Peak lookout, an Aermotor LX-24, Gila National Forest.



Figure 169. Reeds Peak lookout cab, Mimbres Ranger District.

Lookout Mountain (Section 18, T11S R9W)

Located on the Black Range Ranger District, this 30 feet high MC-24 Aermotor steel tower was erected in 1933. The original 12 feet square wooden cab was replaced by a CL-100 series 14 feet square cab in 1965 (Figure 170). The outbuildings are all of recent construction. The lookout tower has been extensively modified with new windows and siding. It has lost its integrity of original design, construction, workmanship and materials and is not recommended for National Register eligibility.

Bearwallow Mountain Lookout (Section 11, T10S R18W)

The Bearwallow lookout was erected in 1923 on the Glenwood Ranger District. This lookout is an Aermotor LX-24, 35 feet high with a wooden cab 7 feet square. The lookout tower has been extensively remodeled. The original windows were completely replaced, new stairs installed and the roof and exterior walls covered with steel in 1984 (Figures 171 and 172).

The upper log cabin (Figure 173) was built in 1923 and the lower cabin, formerly a barn,



Figure 170. The Lookout Mountain site with its CL-100 series lookout, Gila National Forest.



Figure 171. Bearwallow lookout site with another Aermotor LX-24, Gila National Forest.



Figure 172. Bearwallow lookout's cab, Glenwood Ranger District, Gila National Forest.

(Figure 174) and the privy were erected in 1940. The two log cabins show few changes since their construction. Both log cabins have retained their integrity of original design and both are recommended for National Register eligibility. The lookout tower is not, as it has been so extensively remodeled that it has lost its integrity of design, workmanship and materials.

Negrito Mountain Lookout (Section 2, T10S R17W)

Located on the Reserve Ranger District, this Aermotor MC-24, steel tower 30 feet high with a 12 feet square wood cab was erected in 1934. The lookout was extensively remodeled in 1984, with new windows, new steel siding and a new roof (Figure 175). The lookout has lost its integrity of original design, construction, materials and workmanship and is not recommended for National Register eligibility.



Figure 173. Log cabin at Bearwallow lookout cabin, Gila National Forest.



Figure 174. Bearwallow lookout cabin, Gila National Forest.



Figure 175. Negrito Mountain lookout.



Figure 176. Black Mountain lookout.



Figure 177. The Black Mountain lookout cabin was built in 1925 on the Gila National Forest.

Black Mountain Lookout (Section 5, T11S R13W)

This lookout was constructed in 1934 and is located on the Black Range Ranger District (Figures 176 and 177). The 30 feet high Aermotor MC-24 with a wooden cab 12 feet square was remodeled in 1978. All of the original windows were replaced at that time. This lookout replaced an earlier wooden tower built in the 1920s. The present cabin was built in 1925 and is little changed. The lookout tower has not retained its integrity of original design and construction and is not recommended for National Register eligibility. However, the log cabin is over 50 years of age, has retained its integrity of original design, construction, workmanship and materials and is recommended for National Register eligibility.

A New Eye Test For Lookouts:

A new eye test for lookouts was developed last summer and appears to give fairly reliable indications as to how far lookouts are likely to see small columns of smoke. In this respect it apparently is a great improvement over the Snellen Test now in wide use. The test consists of a black panel 22 x 30 inches on which is mounted a white dot 3/8 inch in diameter. The maximum distance at which this white dot can be seen (out-of-doors and facing the sun) indicates the quality of eyesight. Plans are being made to obtain more records so that a very dependable table of distances can be had to indicate quality of eyesight. For the present, however, this can be done with fair accuracy as a result of tests made last year. A feature of the test is that guessing is largely eliminated. (Region 6 news).

The Forest Pioneer, April 1934 (p. 3)

Hillsboro Peak Lookout (Section 4, T16S R9W)

Located on the Black Range Ranger District, this 45 feet high Aermotor MC-40 steel tower has a 7 feet square steel cab and was erected in 1933 (Figures 178 and 179). This lookout replaced a wooden tower built in the early 1920s. The log cabin associated with this lookout (Figure 180) was built in 1925. The modern metal building was built in 1965. Because the lookout tower and cabin have both retained their integrity of original design, construction, workmanship, materials, location, setting and association and are over 50 years of age, they are both recommended for National Register eligibility.



Figure 178. Hillsboro Peak lookout, an Aermotor MC-40, and cabins on the Gila National Forest.

Lookout Jobs Wanted

A couple of ambitious young men, recently arrived from the east but now stopping in Winslow, says the Coconino News Bulletin, applied at this office for a summer job as fire guard or lookout. We had to inform them that all our places were tentatively filled. They then inquired regarding the chances of obtaining a similar position in the petrified forest, which they had heard was located in this part of the country. We referred them to the forest headquarters at Holbrook.

The Forest Pioneer, April, 1924



Figure 179. An unusual antenna tops this MC-40 at Hillsboro Peak lookout.



Figure 180. The Hillsboro lookout cabin, Gila National Forest.



Figure 181. El Caso lookout, an Aermotor MC-24 on Quemado Ranger District.



Figure 182. El Caso lookout's cabin, built in 1934 on the Gila National Forest.

El Caso Lookout (Section 27, T2S R16W)

This Aermotor MC-24 lookout tower site (Figures 181 and 182) is located on the Quemado Ranger District. The tower is 30 feet high and has a wooden cab 12 feet square. The tower and associated cabin were both built in 1934. This lookout tower is unchanged from its initial construction. It represents one of the best examples of an Aermotor MC-24 tower and cab in the Southwestern Region. Because both the lookout tower and cabin retain excellent integrity of original design, construction, workmanship, materials, location, setting and association and are over 50 years of age, both of them are recommended for eligibility.



Figure 183. Signal Peak lookout, Gila National Forest (Aermotor MC-40)

Signal Peak Lookout (Section 15, T16S R13W)

Located on the Silver City Ranger District, this 30 feet high Aermotor MC-24 steel tower (Figure 183) was erected in 1932. The original 12 feet square steel cab was replaced in 1966 by a steel cab 14 feet square of the USDA Forest Service Standard Plan CL-100 to CL-106 series type. All of the support buildings were erected in the 1960s. This lookout is recent in design and construction and is not recommended for National Register eligibility.

Kaibab National Forest

The Kaibab National Forest encompasses 1.6 million acres in north-central Arizona and contains large commercial timber stands and extensive grazing lands. One of its districts (Tusayan Ranger District) virtually surrounds Grand Canyon National Park.

The Kaibab National Forest has had a complex administrative history. The Grand Canyon Forest Reserve was created by President Cleveland on February 20, 1893. In 1908, all of the San Francisco Mountains and parts of the Black Mesa, Tonto and Grand Canyon Forest Reserves were consolidated under the name of Coconino National Forest. In 1910, part of the Coconino National Forest became the Tusayan National Forest. Also in 1908, the Dixie National Forest and the Kaibab National Forest were created. In 1924, the Dixie National Forest was consolidated with the Kaibab National Forest and then, in 1934, portions of the Kaibab National Forest north of the Grand Canyon and the Tusayan National Forest south of the Grand Canyon were combined to form today's Kaibab National Forest.



Figure 184. Round Mountain lookout, probably a modified Aermotor MC-39, on the Kaibab.

Round Mountain Lookout (Section 33, T19N R2E)

Located on the Williams Ranger District, this 35 feet high steel tower has a 7 feet square steel cab (Figure 184). It was erected in 1960, after being moved from the Coconino National Forest.

The lookout tower appears to be an Aermotor MC-39 type and has experienced some structural changes with new windows and siding. Since this lookout was moved from another location and has been in place less than 50 years, it is not recommended for National Register eligibility.

Bill Williams Lookout (Section 17, T21N R2E)

Located on the Williams Ranger District, this Aermotor MC-39 steel tower is 45 feet high with a 7 feet square steel cab. It was erected in 1937, and then it was extensively remodeled in the 1980s, when new aluminum sliding windows, a new linoleum floor and a new fire-finder pedestal were installed. This lookout tower has lost its integrity of original design and construction.

The associated wood frame cabin, built in 1938, measures 18 feet by 8 feet (Figure 185). It also was extensively remodeled in 1968, when a metal roof was installed along with new redwood siding. A shed-roofed addition was built in the last ten years.



Figure 185. Bill Williams lookout cabin was built in 1938 on the Williams Ranger District.

There have been many intrusions at this lookout site including nine buildings and microwave towers associated with private industry (Figure 186). This lookout tower and cabin have lost



Figure 186. Bill Williams lookout (an Aermotor MC-39) and cabin on the Kaibab National Forest.



Figure 187. Red Hill lookout, a CL-100 series, built in 1958 on the Kaibab National Forest.

their integrity of original design, construction, workmanship, materials, location and setting and are not recommended for National Register eligibility.

Red Hill Lookout (Section 17, T24N R4E)

Red Hill has a USDA Forest Service Standard Plan CL-100 to CL-106 series type (Figure 187). It has a steel cab 14 feet square set on an 8 feet high concrete blockhouse base. Erected in 1958, it replaced an earlier wooden tower built in the late 1920s.

Several contracts were let for the construction of this lookout. The cab materials were provided by the Dresser-Ideco Company of Columbus, Ohio. The labor for erecting the cab was provided by the Dell Massey Construction Company of Williams, Arizona. The labor for erecting the concrete blockhouse base was provided by Henry C. DeNava of Williams, Arizona.

This lookout is less than 50 years old, does not represent an exceptional type of style and is not recommended for National Register eligibility.

Jacob Lake Lookout (Section 17, T38N R1E)

This 100 feet high Aermotor MC-39 steel tower has a steel cab 7 feet square (Figure 188). It was erected in 1934 by contractors from Kanab, Utah, and is located on the North Kaibab Ranger District. The tower has received only routine maintenance and shows no major structural changes. The lookout's cabin is not at the site, but is located one mile away at an old



Figure 188. Jacob Lake lookout, an Aermotor MC-39 built in 1934, Kaibab National Forest.

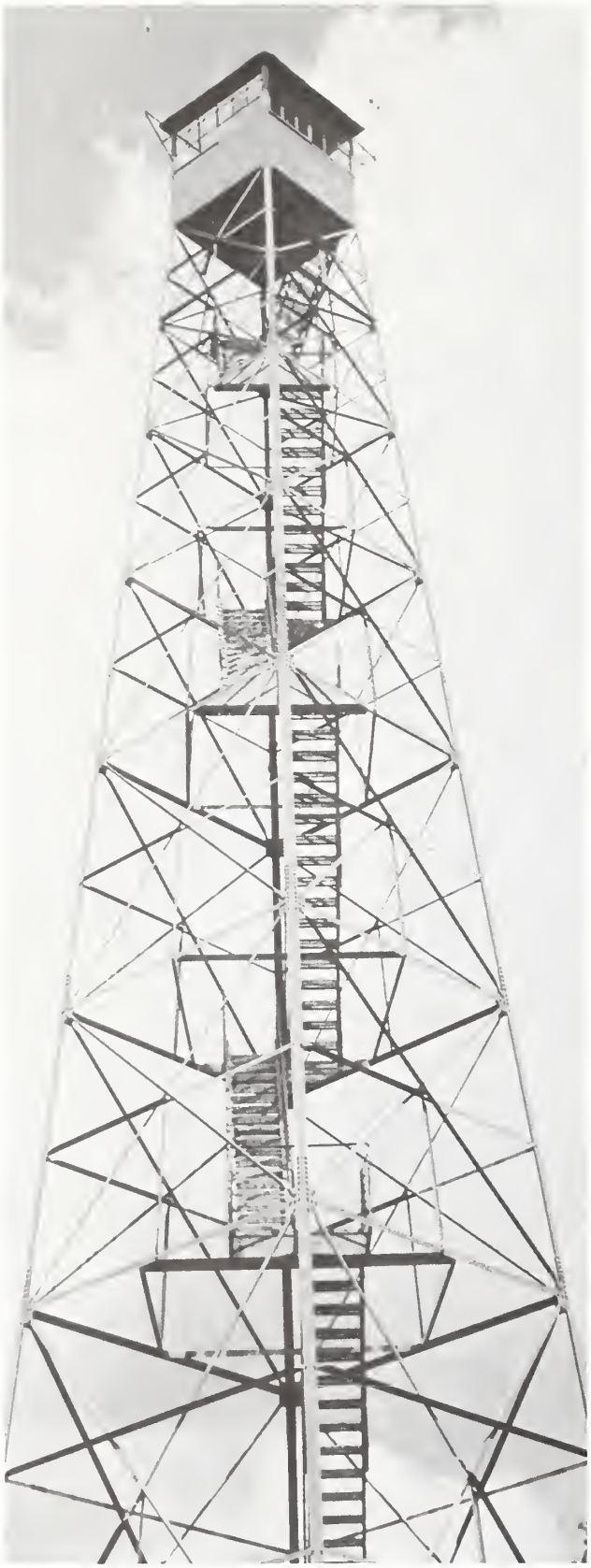


Figure 189. Big Springs lookout, another Aermotor MC-39, on the Kaibab National Forest.

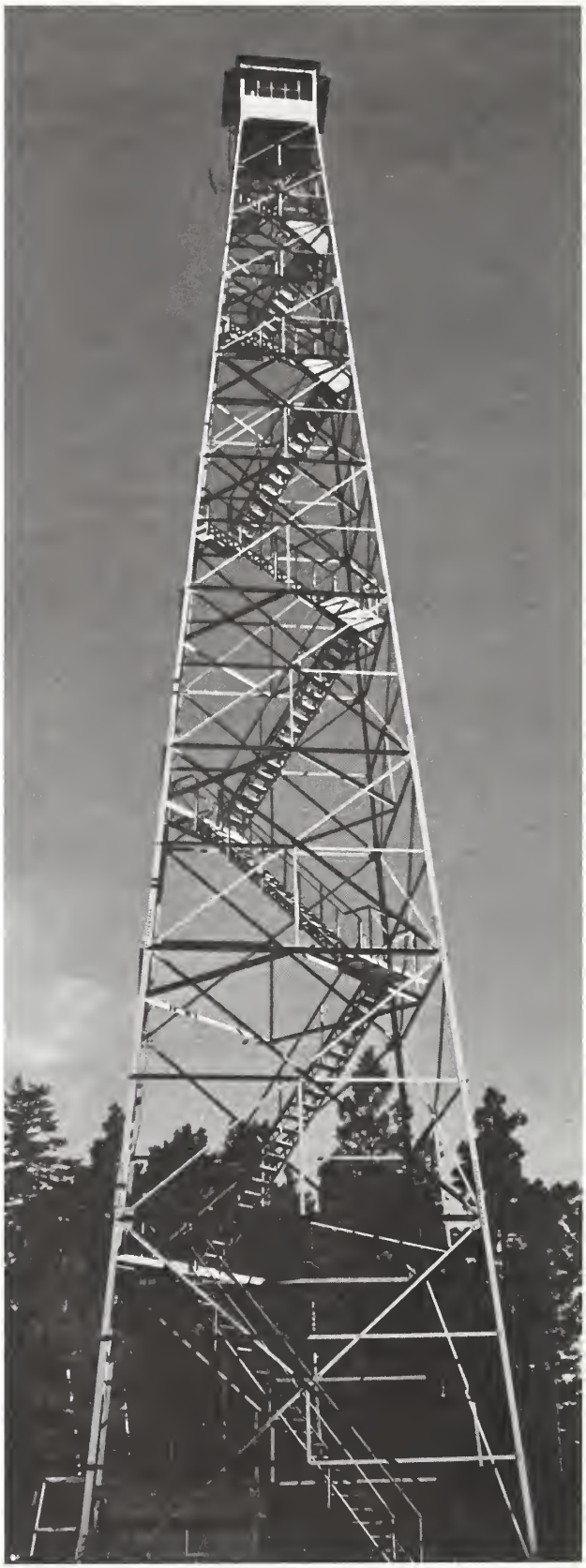


Figure 190. Dry Park lookout, an Aermotor MC-99, was built in 1944 on the Kaibab National Forest.

administrative site. Because this lookout has retained its integrity of original design, construction, workmanship, materials, setting, location and association and is over 50 years of age, it is recommended for National Register eligibility.

Big Springs Lookout (Section 19, T37N R1E)

Big Springs Lookout (Figure 189) was erected for the USFS in 1934 by contractors from Kanab, Utah. The 100 feet high steel tower has a steel cab 7 feet square and is located on the North Kaibab Ranger District. This lookout is an Aermotor MC-39 type. The associated 18 feet by 24 feet wooden frame cabin was built in 1959 to replace an earlier log cabin. Study of historic photographs indicates few structural changes have occurred since the lookout was built. Because the lookout tower is over 50 years of age and has retained its integrity of original design, construction, workmanship, materials, setting, location and association, it is recommended for National Register eligibility.

Dry Park Lookout (Section 12, T35N R1E)

The Dry Park Lookout was built in 1944 after two years of delays due to problems with the War Production Board. The steel tower is 120 feet high with a steel cab 7 feet square (Figure 190). It is an Aermotor MC-99 type and the tallest tower on the Kaibab National Forest. Window pane design is slightly different on this MC-99 model than on earlier Aermotor models. The lookout tower has experienced no major structural modifications since it was built. It replaced an earlier wood tower built in the 1930s.



Figure 191. Dry Park lookout's cabin predates the tower by eight years.

The Aermotor MC-99 type is unusual for the Southwestern Region. This lookout is one of only two extant samples of the style, the other being on the Lincoln National Forest.

The cabin at this site is 22 feet by 25 feet with four rooms (Figure 191 and was built in 1936. It has a simple gable roof covered with corrugated tin. It is a "builder bungalow" style with red-painted wood siding and white trim. It has an extended eave over the doorway supported by brackets with diamond cut purlins. Rafters under the eaves are exposed. The windows are all six-over-six light wooden sash.

There are two storage buildings (Figures 192 and 193) at this site. Storage building Number 1 is a 12 feet by 14 feet board-and-batten structure with a shingled gable roof. Storage building Number 2 is a 7 feet by 9 feet board and batten structure with a shingled gable roof. The two storage sheds were built in 1936.

The lookout tower at this site is less than 50 years of age and falls outside the 1942 cutoff for this study. The support buildings at this site retain their integrity of original design, construction, workmanship, materials, setting, location and association and are recommended for National Register eligibility.



Figure 192. Dry Park lookout's storage building Number 1, Kaibab National Forest.

Red Butte Lookout (Section 8, T28N R3E)

Located on the Tusayan Ranger District, the Red Butte Lookout (Figure 194), erected in 1980, is the most recent lookout built in the Southwestern Region. The plan was created specifically by the



Figure 193. Dry Park lookout's storage building Number 2, Kaibab National Forest.



Figure 194. Red Butte lookout, a CL-100 series, Kaibab National Forest.

Engineering Department of the Kaibab National Forest. It is based on the USDA Forest Service Standard Plan CL-100 to CL-106 series type. The two-story cab is constructed of reverse board and batten stained wood. It has aluminum frame fixed and sliding windows. The wood frame storage shed is the same age. This lookout replaced an earlier Aermotor tower built in the 1930s. The lookout and associated storage shed are less than 50 years old, do not represent an exceptional type and are not recommended for National Register eligibility.

Kendrick Lookout (Section 3, T23N R5E)

Located on the Chalender Ranger District, the Kendrick lookout was erected in July of 1964, replacing an L-4 lookout house built in the 1930s. The lookout (Figure 195) is a USDA Forest Service Standard Plan CL-100 to CL-106 series type erected by Asa G. Edkel of Prescott, Arizona. The steel tower is 10 feet high and the steel cab measures 14 feet square, another example of an R-6 flat design. The steel cab was provided by the Shuler Engineering Company of Newark, Ohio. This site is located in a wilderness area, the mountain top having been used as a fire lookout site as early as 1910 or 1911.



Figure 195. Kendrick lookout, another CL-100 series. Kaibab National Forest

The cabin (Figure 196), located approximately 1500 feet from the lookout, was built in 1911 by fire lookout guard, Bill Williams. He lived in there and hiked up to the top of the mountain during the day to watch for smoke. The cabin was used until the early 1930s. It is still standing and is in excellent condition. It is used today as a hiker's shelter.

The cabin measures 9 feet by 12 feet, has a simple, corrugated tin gable roof with deeply overhanging eaves, a round debarked ridge pole and purlins. The logs in the walls are joined with square notches at the corners (Figure 197). The mortar between the joints is concrete. The foundation consists of basalt blocks with concrete mortar. The cabin has a wood plank floor, one wood plank door on the south end and windows on the east and west sides. This cabin is the second oldest example of a fire detection



Figure 196. Kendrick lookout's cabin was built by Bill Williams in 1911.



Figure 197. This corner view shows the quality of Williams' square notching work.

structure present in the Southwestern Region. [See Figures 108 and 109 - Canjilon Mountain Lookout] The USFS has placed an interpretive sign at this cabin site.

Because the cabin is over 50 years of age and retains its integrity of original design, construction, workmanship, materials, location and setting, it is recommended for National Register eligibility. The lookout tower is not recommended for National Register eligibility as it is less than 50 years old and does not represent an exceptional type.

Volunteer Lookout (Section 8, T21N R5E)

This lookout (Figure 198) is also located on the Chalender Ranger District and was erected in 1963. The steel lookout tower is 30 feet high and has a steel cab 14 feet square. It is a USDA Forest Service Standard Plan CL-100 to CL-106 series type. It was built by the USFS and the Navajo Army Depot and is still jointly operated. It replaced an earlier 16 feet high wood tower with a 7 feet square cab built in 1932.

The associated wooden frame cabin (Figure 199) was built in 1939 to USFS Plan B-16. It has a gable roof and is constructed on the same plan as the Grandview Lookout cabin with some differences in detailing such as wider weather board siding. The cabin has a simple gable roof with asphalt shingles, exposed rafters and brown-painted wooden siding. It has wood sash windows. The cabin sits on a poured concrete foundation. The interior has two rooms, a kitchen and a bedroom.

Because the cabin at this site meets the age requirements and has retained its integrity of original design, construction, materials, workmanship, setting and location, it is recommended for National Register eligibility. The lookout tower is less than 50 years old, does not represent an exceptional type or style and is not recommended.



Figure 198. Volunteer lookout, a CL-100 series, was built in 1963 on the Kaibab National Forest.



Figure 199. Volunteer lookout's cabin was built in 1939, on the Kaibab National Forest.



Figure 200. Grandview lookout, an Aermotor MC-39, is 80 feet tall and was built in 1936.

Grandview Lookout (Section 27, T30N R4E)

This lookout (Figures 200 and 201) is located on the Tusayan Ranger District and was built in 1936. The steel lookout tower is 80 feet tall and has a steel cab 7 feet square. It is an Aermotor MC-39. This tower replaced an earlier log tower and platform built in the 1920s.

The wooden frame cabin was also built in 1936 and is from Forest Service Plan B-16. The cabin measures 12 feet by 22 feet and has two rooms. It has a shingled gable roof with overhanging eaves and exposed rafters. The eave above the front door is extended and supported by knee brackets with diamond cut purlins. The cabin has weather-board siding and a poured concrete foundation.

Because the lookout tower and cabin are both over 50 years old and have retained their integrity of original design, construction, workmanship, materials, setting, location and association, both are recommended for National Register eligibility.



Figure 201. The cabin at Grandview lookout was built to plan B-16 in 1936.

Lincoln National Forest

The Lincoln National Forest is located in New Mexico and covers over one million acres. It has important water, wildlife, wood, grazing, forage and recreation resources. Five rivers, the Ruidoso, Felix, Penasco, Hondo and Bonito, flow from the east side of the mountains. They are all tributaries of the Pecos River and supply a major portion of the water for southeastern New Mexico and west Texas. The 31,000 acre White

Mountain wilderness is located within the Lincoln National Forest.

In 1950, a passing motorist carelessly discarded a match or cigarette starting the Capitan Fire which burned 17,000 acres before being brought under control. A crew of fire fighters found and rescued a badly burned bear cub. This cub was to become known as Smokey the Bear and became a major symbol of the Forest Service fire safety and prevention program.

The Lincoln Forest Reserve was created in 1902. The Galinas Forest Reserve was created in 1906, the Guadalupe National Forest in 1907 and the Sacramento National forest in 1907. In 1908, the Guadalupe and Sacramento National Forests were consolidated into the Alamo National Forest and the Gallinas and Lincoln National Forests were consolidated into the Lincoln National Forest. On June 6, 1917, the Alamo National Forest was transferred to the Lincoln National Forest.

Many Visitors To Monjeau

The El Paso Times of November 120 carried a picture of the new observatory located on Monjeau Peak on the Lincoln National Forest with a description of the new structure. According to the article 10,000 persons visited the lookout this past season.

The Forest Pioneer, 4th Quarter 1940 (p. 21)



Figure 202. Monjeau lookout, a 7 feet square steel cab on a distinctive native stone tower.

Monjeau Lookout (Section 24, T10S R12E)

Monjeau, located on the Smokey Bear Ranger District, was built by a CCC crew in 1940. This is one of the most unique lookouts in the Southwestern Region (Figures 202 and 203) [Also, see Figure 50 for an earlier view]. It is illustrated in the USFS Standard Lookout Planbook originally published in 1938.



Figure 203. A rocky stairway leads to Monjeau lookout, Lincoln National Forest.

The Monjeau lookout has a metal cab 7 feet square manufactured by International Derrick set on a native stone tower 14 feet square. The cab is for observation only; living quarters are located below in the stone tower. The cab and tower plan (No. B6601) was provided by the International Derrick Company. The Monjeau lookout replaced an earlier D-6 cupola type lookout house built in the early 1930s. The Monjeau lookout is located at an elevation of 9,641 ft and is a popular visiting spot for tourists. This tower represents an excellent example of the "rustic style" construction type utilized by the CCC for the National Park Service and USFS buildings. It is the only example of a lookout in the Southwestern Region that utilized that style.

Because this lookout is the most unusual architectural lookout type in the Southwestern Region and has retained its integrity of original design, construction, setting, location, workmanship and materials, it is recommended for National Register eligibility. Due to other areas of significance, the replacement of windows at the Monjeau lookout is not regarded as disqualifying.

Dark Canyon Lookout (Section 31, T25S R22E)

Located on the Guadalupe Ranger District, the Dark Canyon lookout (Figure 204), is a 48 feet high steel tower with a steel cab 7 feet square. An Aermotor MC-99 type, it was erected in 1948 or 1949. It is one of only two Aermotor MC-99 types that still stand in the Southwestern Region. The other is located on the Kaibab National Forest [See Figure 190].

The Dark Canyon site has been utilized for fire detection since 1910. Two tall pine trees with ladders and platforms were first utilized for lookouts. A log cabin was built to house the lookout personnel. No remains of any of these structures can be seen today. In the late 1930s, the CCC destroyed the log cabin and built the present cabin and toolshed.



Figure 204. Dark Canyon lookout, an Aermotor MC-99, and cabins on Lincoln National Forest.

Another tower, condemned by another National Forest, was brought in, erected and removed within a year. Apparently, the Ranger District then renewed the use of the tree lookouts. In 1949, the Forest Service received a surplus tower

from the United States Army. This tower was 90 feet tall, but the Forest Service used only a portion of it. It was constructed by a Mr. McCollaum, father of Kenneth McCollaum, the current Fire Management Officer on the Guadalupe Ranger District.

The cabin and tool shed also have been modified. The original shiplap fir roofs were replaced, first by cedar shingles, and then in 1976 by a tin roof. In 1984, both buildings received new aluminum siding. The tower's modifications were primarily confined to the interior. This lookout has been moved, losing its integrity of location and is not recommended for National Register eligibility.

Wofford Lookout (Section 19, T15S R13E)

Located on the Cloudcroft Ranger District, this site (Figures 205 - 207) has a steel Aermotor MC-39 tower 80 feet high with a 7 feet square steel cab. It was erected in 1933 by the CCC.

The wood frame cabin was built in 1933 and the storage buildings in 1937. The cabin measures approximately 16 feet by 12 feet, has a simple gable roof and narrow wood slats for siding. The roof is covered with wooden shingles. The interior walls are plasterboard and the floors are hardwood. The storage shed has a simple gable wood shingled roof and measures about 7 feet by 10 feet. Both buildings rest on cement foundations.

The Forest Service had scheduled for removal some structures at this site. The first cultural resource inventory, done by Spoerl (1981), did not cite this historical lookout complex as being a cultural resource. The second report, and more complete evaluation by Johnson (1985), described the lookout complex as a cultural resource and provided some descriptive information. Recognizing the significance of the site as examples of both fire detection structures and CCC construction, Johnson felt the Wofford lookout complex was potentially eligible. At the same time, he decided that the structures could not be preserved in place.

The New Mexico State Historic Preservation Officer (SHPO) was consulted. He replied on June 28, 1985, in a letter to Mr. James R. Abbot, Forest Supervisor of the Lincoln National Forest. Thomas W. Merlan, New Mexico SHPO, stated that the Wofford complex was eligible for the National Register and that the structures should be preserved in place, or that a mitigation plan be developed.



Figure 205. Wofford lookout tower, an Aermotor MC-39, and cabin on the Lincoln National Forest.



Figure 206. Wofford lookout's cabin and storage shed, on the Lincoln National Forest.

Because the Wofford lookout and associated buildings are over 50 years of age and have retained their integrity of original design, construction, location, setting, workmanship and materials, they are recommended for National Register eligibility.



Figure 207. Wofford lookout cabin, Lincoln National Forest.

Sacramento Lookout (Section 18, T18S R12E)

Located on the Cloudcroft Ranger District, this 67 feet high steel tower has a steel cab 14 feet square (Figure 208). It was erected in 1968 to replace an Aermotor LX-24 built in 1925. The present lookout is a USDA Forest Service Standard Plan CL-100 to CL-106 series type. The original tower at this location was warped by the Danley forest fire in 1967, and had to be destroyed. The present lookout is less than 50 years old, does not represent an exceptional type and is not recommended for National Register eligibility.

James Ridge Lookout (Section 31, T15S R14E)

This lookout (Figure 209) is located on the Cloudcroft Ranger District. It is a 62 feet high steel tower with a 7 feet square steel cab. It is an Aermotor LX-24 type that has been extensively remodeled. The lookout was moved to James Ridge in 1967 from its original location at the Mayhill lookout site. The lookout tower has lost its integrity of location since it was moved and it is not recommended for National Register eligibility.



Figure 208. Sacramento lookout, a CL-100 series, built in 1968 for the Lincoln National Forest.



Figure 209. James Ridge lookout was moved from its original site at Mayhill.

Ruidoso Lookout (Section 27, T11S R13E)

This lookout, a 30 feet high steel tower with a wooden cab 14 feet square, is an Aermotor MI-25 type. It was erected in 1940 on the Smokey Bear Ranger District. The Aermotor MI-25 type is an unusual and rare type of lookout in the Southwestern Region (Figure 210). Only one other MI-25 is known, that being located on the Gila National Forest [See Figures 161 and 162].

The Ruidoso lookout does not appear to have experienced any major modifications since it was constructed. Because this lookout falls within the 1942 cutoff date for this study and it retains its integrity of original design, construction, workmanship and materials, it is recommended for National Register eligibility.



Figure 210. Ruidoso lookout has an Aermotor MI-25, one of only two of that type in the Region.

Bluewater Lookout (Section 13, T18S R14E)

Located on the Mayhill Ranger District, this 45 feet tall steel tower with a steel cab 7 feet square is either an Aermotor LX-24 type or an International Derrick Company tower (Figures 211 and 212). The Forest Service's records are not clear on this point. Research efforts have not been able to clarify this. It appears that while the International Derrick Company did manufacture steel towers, they did not differ much from the more common Aermotor towers. Other USFS records cited by Irwin (1986) state that this lookout tower was built in 1917 for the United States Weather Bureau and sold to the USFS for erection at this site in 1937.

Study of historic photographs suggests that no major structural modifications have occurred. Although moved from its original location, this lookout has been in place at its present location and used as a fire detection facility for 50 years. The wooden frame cabin and storage shed (Figures 213 and 214) also were built at this site on 1937. They have experienced little modification outside of normal maintenance over the years.

The entire lookout complex, including the tower, cabin and storage shed, retains its integrity of original design, construction, workmanship, materials, setting, location and association and is recommended for National Register eligibility.



Figure 211. Bluewater lookout (either an Aermotor LX-24 or International Derrick) cabin, and storage shed.



Figure 212. Bluewater lookout's cab, Lincoln National Forest.



Figure 213. Bluewater lookout cabin, Lincoln National Forest.



Figure 214. Bluewater lookout storage shed, Lincoln National Forest.



Figure 215. Weed lookout, an Aermotor LX-24, Lincoln National Forest.

Weed Lookout (Section 25, T17S R13E)

This Aermotor LX-24 lookout, located on the Mayhill Ranger District, was erected in 1926. It is the oldest surviving lookout on the Lincoln National Forest. The steel tower is 48 feet high and has a steel cab 7 feet square (Figures 215 and 216). A wooden frame cabin was removed in 1978. Historic photographs indicate that no major structural changes have occurred to the tower. The wooden steps were replaced by metal ones in 1966 and a microwave dish was added for communication purposes in 1985. Otherwise, the lookout retains much of its integrity of original design, construction, location, setting, workmanship, materials and association and it is recommended for National Register eligibility.



Figure 216. Weed lookout's cab and microwave antennas, Lincoln National Forest.



Figure 217. Carrisa lookout, an Aermotor MC-39, Lincoln National Forest.



Figure 218. Carrisa lookout, an Aermotor MC-39 with an 80 feet high steel tower, built in 1934.

Carrisa Lookout (Section 9, T19S R13E)

This Aermotor MC-39 lookout tower was erected in 1934 or 1935 and is located on the Mayhill Ranger District. It is an 80 feet high steel tower with a steel cab 7 feet square (Figures 217 and 218). This MC-39 apparently replaced earlier lookouts at this location. The wooden frame cabin with a simple gable roof (Figure 219) was built in 1935. The storage shed (Figure 220) and latrine were built in 1937. Neither of these structures show any modification from earlier photographs. The lookout tower has experienced no major structural changes.

Because the lookout tower and support buildings all meet the age requirements and have retained integrity of original design, construction, setting, location, workmanship, materials and association, the entire Carrissa lookout complex is recommended for National Register eligibility.



Figure 219. Carrisa lookout's wooden frame cabin is on the Mayhill Ranger District.



Figure 220. Carrisa lookout's storage shed.

Prescott National Forest

The Prescott National Forest encompasses over one million acres of land in north-central Arizona. It has important timber, forage, recreation and historic resources. The Forest surrounds the town of Prescott which was the first territorial capital of Arizona. For many years, the mining industry was important to the economy of the area, and the forests supplied wood for this industry. The Prescott Forest Reserve was created on May 10, 1898. The Verde Forest Reserve was created on December 30, 1907. On July 2, 1908, the Prescott and Verde were consolidated under the name of Prescott National Forest. On October 22, 1934, 249,201 acres of the Tusayan National Forest were transferred to the Prescott National Forest.

Horsethief Lookout (Section 33, T10N R1E)

Located on the Bradshaw Ranger District, this 40 feet tall steel tower has a 12 feet square wooden cab (Figures 221 and 222). The tower and cab were manufactured by the Pacific Coast Steel Company of San Francisco and were erected in 1934. The cabin, barn and corral, all built in 1928, were torn down in 1968. This lookout has been extensively remodeled. The original windows were replaced in 1976 and 1983. New roofing was added in 1983 and new siding in 1984.

Because this lookout has lost its integrity of original design, construction, workmanship and materials due to the extensive remodeling, the site is not recommended for National Register eligibility.



Figure 221. Horsethief lookout tower, a Pacific Coast Steel type, and its water tank on Prescott National Forest.



Figure 222. The cab of Horsethief lookout, with new siding and aluminum sliding windows.

Towers Mountain (Section 4, T10N R1W)

This lookout (Figure 223), a 30 feet high steel tower with a wooden cab 12 feet square, was also designed by the Pacific Coast Steel Company of San Francisco. It was erected at this site in 1933. A wood frame barn and cabin were built in 1928 to accompany an earlier wooden tower or lookout tree. This lookout site is located on the first (1902) ranger district in Arizona and may have served as a fire lookout point as early as 1902 or 1903.

This lookout site has been heavily disturbed by many intrusions from the construction of as many as eight microwave communication towers (Figure 224). The lookout cab has been heavily remodeled, including the addition of new windows in 1976 and 1983, new roofing in 1983 and new siding in 1984. The cabin and barn (Figures 225 and 226) have experienced little modification outside of normal maintenance.

Because the lookout tower does not retain its integrity of original design, construction or setting and the site integrity is poor, the lookout complex is not recommended for National Register eligibility.



Figure 223. Towers Mountain lookout, a Pacific Coast Steel type, on the Prescott National Forest.



Figure 224. The Towers Mountain lookout site showing the many communications towers, Prescott National Forest.



Figure 225. Towers Mountain lookout's cabin, Bradshaw Ranger District.



Figure 226. Towers Mountain lookout's barn, Prescott National Forest.

Mount Union Lookout (Section 6, T12N R1W)

Mount Union lookout is an Aermotor MC-24 and was erected in 1933 by CCC crews. This 30 feet high steel tower has a wooden cab 12 feet square. It is located on the Bradshaw Ranger District. The lookout tower (Figure 227) has experienced extensive modification including replacement of windows in 1979, new roofing in 1982, new stairs in 1983, and new siding in 1982. The lookout tower has lost its integrity of original design and construction and is not recommended for National Register eligibility.

The cabin (Figure 228), also built in 1933, has a simple gable roof, an overhanging porch (6 feet), interior oak floors and paneling, and redwood siding. It has experienced no major structural changes retains its integrity of original design and construction and is recommended for National Register eligibility.



Figure 227. Mount Union lookout, an Aermotor MC-24, built in 1933 on Prescott National Forest.



Figure 228. The Mount Union lookout's cabin, on Prescott National Forest.

Mingus Lookout (Section 11, T15N R2E)

Located on the Bradshaw Ranger District, this 59 feet tall, steel x-brace tower has a 7 feet square steel cab. The lookout tower (Figure 229) was designed by the Pacific Coast Steel Company and was erected in 1935. The wooden frame cabin (Figure 230), a simple gable roofed structure with an overhanging front porch, was also built in 1935. Study of historic photographs indicates that no major structural changes have occurred to either the lookout tower or the cabin.

Both Mingus structures are over 50 years old and retain their integrity of original design, construction, workmanship, materials, setting, location and association. Both are recommended for National Register eligibility.



Figure 229. Mingus Mountain lookout, a Pacific Coast Steel type, on Prescott National Forest.



Figure 230. Mingus Mountain lookout's cabin has a floor plan of 376 square feet. A cistern is at the left rear in this view. The cabin was built in 1935.



Figure 231. Spruce Mountain Lookout, an Aermotor MC-24, on Prescott National Forest.

Spruce Mountain Lookout (Section 30, T13N R1W)

This 30 feet high Aermotor MC-24 steel tower has a 12 feet square wooden cab (Figure 231). It was built in 1936 and is located on the Bradshaw Ranger District. It may have been erected by a CCC crew. A barn and wire corral, also built in 1936, are no longer there. This lookout tower has experienced extensive remodeling that included new windows in the period 1972 to 1981, a roof in 1974, siding in 1981, a floor in 1985 and paneling in 1980. The lookout does not retain its integrity of original design, construction, workmanship and materials. It is not recommended for National Register eligibility.

Hyde Mountain Lookout (Section 20, T17N R6W)

This 12 feet square wooden L-4 lookout house was built, probably by a CCC crew, in 1936 and is located on the Chino Valley Ranger District. The lookout is accessible only by a two mile trail. This L-4 type lookout house (Figures 232 and 233)



Figure 232. The solar collectors on Hyde Mountain produce DC power for radios, lights, etc.



Figure 233. Hyde Mountain lookout, an L-4 house, on the Prescott National Forest.

is the only one of its style on the Prescott National Forest. Despite window modification, the Hyde Mountain lookout retains much of its integrity of original design, construction, materials, workmanship, setting and location. It is recommended for National Register eligibility.

Santa Fe National Forest

The Santa Fe National Forest encompasses over 1.5 million acres managed by the Forest Supervisor's office in Santa Fe, New Mexico. This National Forest contains abundant wildlife, timber and forage resources. It also includes the Pecos Wilderness. Tourism, the livestock industry and timber are important mainstays of the economy of north-central New Mexico and are closely tied to national forest resources. The Santa Fe National Forest was created from the consolidation of the Jemez and Pecos National Forests. Previously, the Pecos Forest Reserve had been created by presidential order in 1892, the first in the Southwestern Region. The Jemez Forest Reserve had been created in 1905.

Clara Peak Lookout (Section 19, T21N R7E)

Located on the Espanola Ranger District, this lookout was erected in 1951. The Clara Peak lookout (Figure 234) is identified on USFS inventory forms as a 14 feet square block house. The lookout is constructed of stuccoed cinder blocks. It has metal frame windows with wooden shutters and a wood frame roof. The support structures (outhouse, storage shed and cistern) appear to be the same age.

Clara Peak represents an unusual type as it is a Standard Plan L-4 lookout house that apparently was modified from the original plan during construction. The lookout house retains its integrity of original design and construction, appears to represent an unusual type of a modified L-4 design type. However, this lookout does not meet the age criterion. It is not



Figure 234. Clara Peak lookout, a modified L-4 house, on the Santa Fe National Forest.



Figure 235. Encino lookout, an Aermotor MC-39, on the Santa Fe National Forest.

recommended for National Register eligibility.

Encino Lookout (Section 19, T22N R4E)

This 59 feet high steel Aermotor MC-39 tower has a 7 feet square steel cab (Figure 235). It is located on the Coyote Ranger District. The Encino site was constructed in July 1950 as it presently exists. Other structures include a wooden frame living quarters (Figure 236), a metal storage shed, a log cabin (Figure 237) and a wooden frame outhouse.

The lookout tower and associated structures retain excellent integrity of original design and construction. However, research notes on the inventory form suggest that some of the structures at this site (notably, the living quarters and log cabin) were once located at a different lookout site, Cerro Valdez. They were moved to this site in 1950 and 1951. Therefore, this lookout complex lacks integrity of location. The Encino lookout complex is not recommended for National Register eligibility.



Figure 236. Encino lookout's cabin, apparently a transplanted L-4 house, Santa Fe National Forest.



Figure 237. The log cabin at Encino lookout.



Figure 238. Glorieta Baldy lookout, an Aermotor MC-24, on the Santa Fe National Forest.

Glorieta Baldy Lookout (Section 5, T16N R11E)

This 30 feet high steel Aermotor MC-24 tower with a wooden cab 12 feet square (Figure 238) was constructed in 1940 and is located on the Pecos Ranger District. Review of historic photographs indicates that no major structural changes have been made since the tower was built. The Glorieta Baldy lookout represents one of the best examples of an Aermotor MC-24 tower. It has retained excellent integrity of original design, construction, materials, workmanship, location and setting. It is recommended for National Register eligibility.

Cerro Pelado Lookout (Section 20, T18N R4E)

This lookout is located on the Jemez Ranger District and was constructed in 1965. It has a 14 feet square steel cab on a 10 feet high cement blockhouse base (Figure 239). The lookout is a USDA Forest Service Standard Plan CL-100 to CL-106 series type. It replaced an earlier L-4 lookout house constructed in 1932. The L-4 had



Figure 239. Cerro Pelado lookout, CL-100 series, Santa Fe National Forest.



Figure 240. Dome lookout (CL-100 series), Santa Fe National Forest.

replaced an even earlier log cabin lookout that was first utilized on the old Jemez River District in 1904. The present lookout is less than 50 years old, does not represent an exceptional type and is not recommended for National Register eligibility.

Dome Lookout (Section 25, T18N R5E)

This lookout is another USDA Forest Service Standard Plan CL-100 to CL-106 series type, another example of the R-6 flat design. It is located on the Jemez Ranger District and was erected in 1965 to replace an earlier wood frame lookout house (L-4 type) built in the 1930s. The present lookout (Figure 240) consists of a 14 feet square metal cab on a 10 feet high cement block house base. This lookout location was previously known as St. Peter's Dome. The present lookout structure is less than 50 years of age, does not represent an exceptional type and is not recommended for National Register eligibility.

Testing the Lookout's Eyes

Aboriginal vision is still keen. Test points didn't bother this "first American". The lookout-fireman on Grandview Tower on the Tusayan [added to the Kaibab NF in 1934] last year was an Indian named Flyn Watahomigie from Supai Village. Early in the fire season, Ranger Kintner, while on top with his lookout, thought to test the lookout's eyes and at the same time find out how much he knew about the general lay of the country. A train was smoking at Anita and Kintner said, "Flyn, do you ever see trains at Anita?" "Yes, train there now, another at Coconino siding, and two at Grand Canyon. Must be specials running today." Kintner asked, "Do you see that big dust devil on the neutral strip?" "Yes, but those two over on Cataract are bigger and there is one down there on Peterson Park." Flyn passed on the eye test with a mark of 200%.

The Forest Pioneer, April, 1923

Deadman Lookout (Section 6, T25N R2E)

This site has a 30 feet high steel Aermotor MC-24 with a wooden cab 12 feet square (Figure 241). It was erected in 1933 and is located on the Cuba Ranger District. It replaced an earlier wooden platform tower built in the 1920s. The lookout roof has been modified and the original nine-pane windows were replaced with sliding aluminum windows in 1969. This lookout, although meeting the age requirements, has lost its integrity of original design, construction, workmanship and materials and is not recommended for National Register eligibility.



Figure 241. Deadman lookout, an Aermotor MC-24, on the Santa Fe National Forest.

Red Top Lookout (Section 26, T20N R1E)

Located on the Cuba Ranger District, the Red Top Lookout (Figure 242) is the only trailer lookout presently in use on the Santa Fe National Forest. The date at which the lookout trailer was placed at the site is unknown. It apparently replaced (sometime in the 1960s) a 14 feet square wood frame, L-4 type, lookout house built in 1933. This trailer lookout is not recommended for National Register eligibility.



Figure 242. A portable lookout (trailer) now located at Red Top lookout on the Santa Fe National Forest. This is the only trailer in use as a lookout in the Southwestern Region.

Barrillas Lookout (Section 33, T16N R14E)

This 54 feet high steel tower with a 14 feet square steel cab is located on the Pecos Ranger District and was constructed in 1959. This lookout (Figure 243) represents another USDA Forest Service Standard Plan CL-100 to CL-106 series type. It apparently replaced an earlier Aermotor steel tower erected in the 1930s. This lookout is less than 50 years old, does not represent an exceptional type and is not recommended for National Register eligibility.



Figure 243. Barrillas lookout (CL-100 series), Santa Fe National Forest.

Tonto National Forest

The Tonto Forest Reserve was created on October 3, 1905. In 1934, 151,285 acres of the Bloody Basin area on the Prescott National Forest were transferred to the Tonto National Forest. The Tonto National Forest includes 2.9 million acres of forest and desert country extending from the Mogollon Rim to just northwest of Phoenix. This National Forest contains abundant water, timber, recreation, wildlife and forage resources. The Salt and Verde River watersheds provide water for the Phoenix area. The National Forest contains four wilderness areas: the Sierra Ancha, the Pine Mountain, the Mazatzal and the Superstition.

Diamond Point Lookout (Section 23, T10.5N R11E)

This steel Aermotor MC-24 tower is 30 feet high with a 12 feet square cab (Figure 244). It is located on the Payson Ranger District and was erected in the fall of 1936, probably by a CCC crew. The lookout tower has been modified. Metal steps were added in 1984 and, at an unknown date, the original windows were replaced with sliding aluminum windows and the wooden shutters were removed. The lookout tower has lost its integrity of original design and construction and is not recommended for National Register eligibility.

The wooden frame cabin with a simple gable roof and shiplap siding is little changed from when it was built in 1941. A garage barn also built at the site in 1941 was destroyed in 1972. The wood frame cabin has retained its integrity of original design, construction, workmanship and materials and is recommended for National Register eligibility.

Mt. Ord Lookout (Section 34, T7N R9E)

This lookout (Figures 245 - 246), one of the most recent in the Southwestern Region, was erected in 1983 and is located on the Mesa Ranger District. Mt. Ord lookout is a USDA Forest Service Standard Plan CL-100 to CL-106 series type. The steel lookout is 70 feet high with a 14 feet square steel cab.

The present tower replaced an earlier Aermotor MC-39 with a steel cab built in 1936. The 7 feet square cab and part of the tower of the original Aermotor lookout structure are now part of an interpretive exhibit at South Mountain Park in Phoenix.



Figure 244. The Diamond Point lookout, an Aermotor MC-24, and cabin on the Tonto National Forest.



Figure 245. Mt. Ord lookout, on the Tonto National Forest, shares the site with many antennas.

Tonto

The old glassed in cab which sets out on the wind exposed tip of Diamond Point is to be replaced in the near future by a modern 30 ft. tower with glassed in living quarters and observatory at the top. The water supply will be a cistern directly under the tower with a small pump to lift the water into the cabin. Construction work will be done by the Indian Garden ECW Camp. Before starting construction Messers. Sizer and Kirby spent three or four days examining other possible lookout points, particularly those that have recently been made accessible along the Mogollon Rim by the Rim Road. As a result of their investigations it was concluded that from all angles Diamond Point is still the best location. Evidently those who first selected that lookout must have searched the country thoroughly. (Tonto Bulletin)

The Forest Pioneer, 3rd Quarter 1936

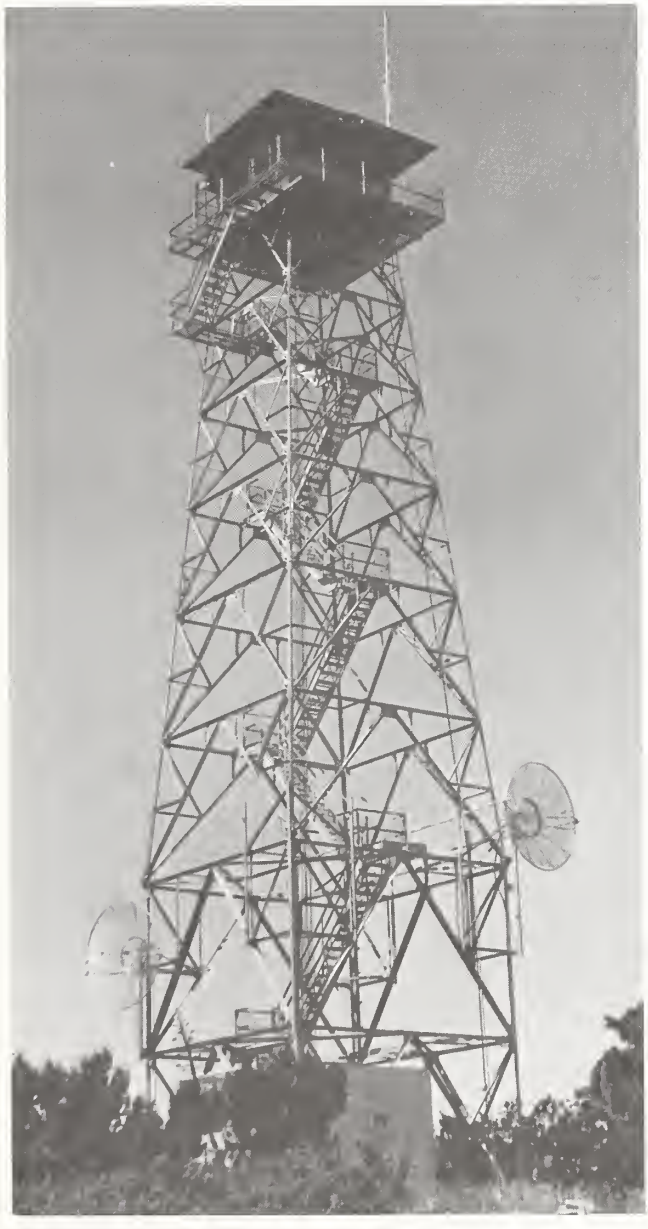


Figure 246. Mt. Ord lookout, a CL-100 series, one of the newest in the Southwestern Region.

The cabin at the site was built in 1935, but has been remodeled. The lookout tower is recently built, and is not recommended for National Register eligibility.

McFadden Peak Lookout (Section 36, T7N R13E)

This lookout (Figure 247) is a USDA Forest Service Standard Plan CL-100 to CL-106 series type. It was erected by Cline Construction Company of Globe, Arizona in 1964. The 14 feet square steel cab sits on a 10 feet high concrete blockhouse base. The lookout is located on the Pleasant Valley Ranger District. This lookout replaced an earlier 20 feet high Aermotor tower with a metal cab 7 feet square built in 1927. A cabin, barn and shed built in the early 1930s were razed in 1964. This lookout, less than 50 years old, does not represent an exceptional type and is not recommended for National Register eligibility.

Colcord Lookout (Section 36, T10.5N R14E)

This lookout (Figure 248) was erected by Cline Construction of Globe, Arizona, in 1960 and is located on the Pleasant Valley Ranger District. It is another example of a USDA Forest Service Standard Plan CL-100 to CL-106 series type also known as an R-6 flat. This lookout tower has a 14 feet square steel cab on a steel tower 83 feet tall.

The present lookout replaced a 50 feet high Aermotor LX-24 tower with a 7 feet square steel cab built in 1925. A second 35 feet high steel Aermotor LX-24 tower was built in 1928 at this site. Apparently the two Aermotor towers were operated at the same time. A cabin associated with these earlier towers has been removed.

The present lookout tower is less than 50 years

of age, does not represent an exceptional type and is not recommended for National Register eligibility.



Figure 247. McFadden Peak lookout was erected in 1964 on the Tonto National Forest.



Figure 248. Colcord lookout, another CL-100 series, on the Tonto National Forest.

Aztec Lookout (Section 34, T6N R14E)

This lookout (Figure 249), located on the Pleasant Valley Ranger District, was erected in 1956. It represents another USDA Forest Service Standard Plan CL-100 to CL-106 series type. The lookout has a 12 feet square steel cab on a steel tower 41 feet high. This lookout replaced a D-6 cupola style lookout house built in 1925. This lookout is less than 50 years old, does not represent an exceptional type and is not recommended for National Register eligibility.



Figure 249. Aztec Peak lookout is on the Tonto's Pleasant Valley Ranger District.

Signal Peak Lookout (Section 5, T2S R15E)

This Aermotor MC-39 lookout tower (Figure 250) was built in 1934 by the CCC and is located on the Globe Ranger District. The Signal Peak lookout tower is 59 feet high and has a steel cab 7 feet square. This lookout replaced an earlier wooden tower built in the 1920s. The lookout tower and cab experienced extensive structural modifications in the 1980s including replacement

of stairways, ceiling and windows.

The cabin and barn were built in 1935. The wood frame cabin (Figure 251) at this site has a large gabled extension porch over the north entrance. The cabin was extensively modified by the addition of two rooms in 1985.

Because both the tower and the cabin have lost their integrity of original design, construction, workmanship and materials, they are not recommended for National Register eligibility.



Figure 250. Signal Peak lookout, an Aermotor MC-39, on the Tonto National Forest.

Humboldt Lookout (Section 1, T7N R5E)

This lookout (Figure 252) was constructed in 1958 and is located on the Cave Creek Ranger District. It is a steel tower (CL-100/106 type), approximately 20 feet high, with a 14 feet square steel cab. The tower was constructed by the Civil Aeronautics Administration (now FAA) in conjunction with building an air navigation communication facility. It replaced an L-4 lookout house on a native stone foundation that had been built in the 1940s. This lookout tower is less than 50 years of age, does not represent an exceptional type and is not recommended for National Register eligibility.



Figure 251. The Signal Peak lookout's cabin, Tonto National Forest.



Figure 252. Humboldt lookout, Tonto National Forest. Built by the Civil Aeronautics Administration, but looks like the CL-100 series.

EVALUATION SUMMARY

This study resulted in the documentation of 101 fire lookout sites which still contain buildings or other structures. Lookout trees generally are not included, although mention is made of their presence on several forests. Tables 2 through 12 present a summary listing of those lookouts and associated structures that either are or are not recommended for National Register eligibility.

All of the lookouts and associated structures recommended for the National Register thematic nomination have retained sufficient integrity (albeit in varying degrees with some lookout facilities) of location, design, setting, materials, workmanship, feeling and association to preserve their historic identities and their direct association with:

1) the development of the Southwestern Region of the USFS with regards to fire detection and protection,
2) the utilization of the CCC during the depression era,
3) the influence of the conservation movement in terms of public land management and
4) the development of a functionally specific architectural style.

All of the lookouts are associated with events that have made a significant contribution to the broad pattern of our history and embody distinctive characteristics of type, period or method of construction. The key evaluation criteria for this study, therefore, became age and integrity. Lookouts in the Southwestern Region of the USDA Forest Service represent a significant, finite, dwindling and nonrenewable cultural resource that make up a distinctive thematic group. A thematic nomination for all eligible lookouts and associated structures will be prepared as the concluding phase of this study.

Thirty-one lookouts were recommended for National Register eligibility. The earliest one was built in 1923, while the majority date from the 1930s and are distinguished by the lack of any major structural modification. Forty-nine associated support structures, including cabins, storage sheds, privies, cisterns and walls, were recommended for National Register eligibility. The earliest surviving structure related to fire detection, a 1909 cabin at Canjilon Lookout on the Carson National Forest in New Mexico, is within this group as well as a 1911 cabin at Kendrick Lookout on the Kaibab National Forest. The recommended associated structures exhibit little or no major structural changes.

As with all evaluations, there is a subjective element present in the decision making process for this study. Extensive comparisons between historic and recent photographs were made to evaluate structural changes over time. Since the facade of a lookout consists largely of window space, the major functional aspect of the lookout, the drastic alteration of window design from the original style was regarded as a serious compromise in integrity or original design and construction. The crowding of a lookout by numerous intrusive non-fire detection facilities (microwave tower, communication repeaters, etc.) was regarded as a serious compromise of site integrity. However, this occurred infrequently and did not represent the single decisive factor in making a recommendation of eligibility for the National Register.

With regard to the preservation of this class of historic sites, Thornton (1986:80) concluded that there is a great sense of urgency necessary in order to protect and preserve many of the older fire lookouts. He described several cases in which he raced against time to record and document certain fire lookouts before they were destroyed. There is a similar sense of urgency for those fire lookouts in the National Forests of the Southwestern Region. Although no lookouts were destroyed during the course of this study, there is a clear and present danger to their long term survival.

No one can control situations in which lookouts are lost because of fire, vandalism or inclement weather (heavy winter snows or strong winds). However, in the Southwestern Region over the past 20 years, when most lookouts have been lost it was the result of Forest Service management decisions.

In the future, when a lookout or associated structure requires extensive repair work due to deterioration or for safety reasons, it should be done in a manner that is sensitive to the original design. By issuing and proceding with this current study, the Forest Service has

demonstrated that it is making an effort to reevaluate its building management decisions so that an irretrievable and important part of Forest Service history (and American history) in the Southwestern Region will not be lost forever.

As Chief Forester John McGuire (1979) said:

> Cultural resources are nonrenewable, once destroyed, they cannot be created. If through carelessness or lack of thoughtful planning, we destroy these vestiges of life in the past, we deny ourselves and future generations the opportunity to learn, to understand and enjoy. The American public cannot risk the loss of this precious heritage due to neglect or lack of appreciation.

Having spent several summers working on fire lookouts in Montana and Idaho, the author fully appreciates the romance and mystique of lookout history. In this same context, Thornton (1986:82) quoted a Miss Hallie Daggett, the first woman lookout observer in the United States Forest Service (Eddy Gulch, Klamath National Forest, 1920s) who sums up the feelings of those people who have served on lookouts and played an active role in their history:

> My interest is kept up by the feeling of doing something for my country, for the protection and conservation of these great forests is truly a pressing need. To women who love the ballroom and the glitter of city life, this work would never appeal, but to me it is work more than useful, it is a grand and glorious vacation-outing, for the very lifeblood of these great foliated mountains surges through my veins, I like it; I love it! And that's why I'm here.

Table 3. Summary of Lookouts on Apache-Sitgreaves National Forests

LOOKOUT	TYPE	DATE	ELIGIBLE
Greens Peak	CL-100/106	1962	No - too recent
Big Lake (CCC)	Aermotor MC-24	1933	No - extensive remodeling of windows & siding
PS Knoll (CCC)	Aermotor MC-40	1933	Yes
	cabin	1939	Yes
	storage shed	1939	Yes
	privy	1940	Yes
Reno	CL-100/106	1965	No - too recent
Rose Peak	Aermotor MC-24	1929	No - cab replaced in 1981
Blue	Aermotor MC-24	1933	No - extensive remodeling of windows & siding
Escudilla	CL-100/106	1965	No - too recent
Juniper Ridge	CL-100/106	1959	No - too recent
Bear Mountain (CCC)	Aermotor MC-24	1933	Yes
	cabin	1940	Yes
	storage shed	1928	Yes
	privy	1940	Yes
Springer Mountain (CCC)	Aermotor MC-24	1933	No - extensive remodeling of windows
Lake Mountain	Aermotor LX-24	1926	Yes
	cabin	1926	Yes
	privy	Unknown	No - too recent
Gentry	CL-100/106	1965	No - too recent
Deer Springs	Aermotor LL-25	1923	Yes
	cabin	1924	Yes
	privy	Unknown	No - too recent
O'Haco	Aermotor LS-40	1966	No - too recent
Promontory	Aermotor LS-40	1924	Yes
	cabin	1924	Yes
	storage shed	1924	Yes
Dutch Joe (CCC)	CT-1	1940	(No - excluded/private land)
	cabin & privy	1940	(No - excluded/private land)

Table 4. Summary of Lookouts on Carson National Forest

LOOKOUT	TYPE	DATE	ELIGIBLE
Canjilon	cabin	1909/1910	Yes
Picuris	L-4 House	1928/1932	No - extensive remodeling in 1980s
Kiowa	Aermotor LL-25	1923	No - extensive remodeling of interior, windows, and ceiling

Table 5. Summary of Lookouts on Cibola National Forest

LOOKOUT	TYPE	DATE	ELIGIBLE
Capilla	CL-100/106	1963	No - too recent construction
Withington	CL-100/106	1952	No - too recent
McGaffey	CL-100/106	1965	No - too recent
Grassy	CL-100/106	1960	No - too recent
Oso Ridge	CL-100/106	1965	No - too recent
Cedro	Aermotor MC-39	1969	No - too recent
Davenport	CL-100/106	1954	No - too recent

Table 6. Summary of Lookouts on Coconino National Forest

LOOKOUT	TYPE	DATE	ELIGIBLE
Moqui	CL-100/106	1952	No - too recent
	cabin	1932	Yes
East Pocket	CT-2/L-4	1943	No - too recent
Apache Maid	CL-100/106	1961	No - too recent
Woody Mountain (CCC)	Pacific Coast Steel	1936	Yes
	cabin	1982	No - too recent
	shower, shed, privy	Unknown	No - too recent
Mormon Lake	Aermotor LX-24	1927	No - extensive remodeling of windows
	cabin	1928	Yes
Baker Butte (CCC)	Aermotor MC-24	1937	No - extensive remodeling of windows and siding
	cabin	1930	No - extensive remodeling additions
Buck Mountain (CCC)	CT-2/L-4	1939	Yes
	shed, privy	Unknown	No - too recent
Hutch Mountain (CCC)	Aermotor MC-24	1936	No - extensive remodeling of windows
Lee Butte	International Derrick	1933	Yes
	cabin	1933	Yes
	showerhouse, trailer	Unknown	No - too recent
Turkey Butte (CCC)	Aermotor MC-24	1937	No - extensive modification of windows
	cabin	1984	No - too recent
O'Leary	CL-100/106	1959	No - too recent
Elden	??	1977	No - too recent

Table 7. Summary of Lookouts on Coronado National Forest

LOOKOUT	TYPE	DATE	ELIGIBLE
Atascosa	L-4 House	1930/1933	Yes
	privy	1933	Yes
	cistern	1933	Yes
Barfoot (CCC)	L-4 House	1935	Yes
	shed	1935	Yes
	privy	1935	Yes
	cistern	1935	Yes
	retaining wall	1935	Yes
Mt. Bigelow	Army	1958	No - too recent
Lemmon Rock	L-4 House	1928	Yes
	privy	Unknown	No
Webb Peak (CCC)	Aermotor MC-40	1933	Yes
	cabin	1960/1962	No - too recent
	privy	Unknown	No - too recent
West Peak (CCC)	Aermotor MC-40	1933	Yes
	cabin	1959	No - too recent
	privy	Unknown	No - too recent
Heliograph (CCC)	Aermotor MC-40	1933	Yes
	log cabin	1933	Yes
	wood frame barn	1933	Yes
	privy	1933	Yes
	communications bldg.	Unknown	No - too recent
	TV powerhouse	Unknown	No - too recent
Miller Peak	L-4 House	1926	No - extensive modification of windows
Monte Vista	CL-100/106	1966	No - too recent
(CCC)	cabin	1933	Yes
	metal storage shed and privy	Unknown	No - too recent
Silver Peak (CCC)	L-4 House	1938	Yes
	storage shed	1938	Yes
	privy	1938	Yes
	water cistern	1938	Yes

Table 8. Summary of Lookouts on Gila National Forest

LOOKOUT	TYPE	DATE	ELIGIBLE
Eagle Peak	CL-100/106	1955	No - too recent
Mogollon Baldy	Aermotor MI-25	1948	No - too recent
	cabin	1923	Yes
	metal privy	Unknown	No - too recent
Fox Mountain	CL-100/106	1959	No - too recent
Mangas Mountain (CCC)	Aermotor MC-24	1934	Yes
	cabin	1934	Yes
	metal privy	Unknown	No - too recent
Saddle Mountain	Aermotor MC-24	1933	No - extensive modifiaction, new cab, 1966
Reeds Peak	Aermotor LX-24	1929	Yes
	cabin	1959	No - too recent
	privy, shed	Unknown	No - too recent
Lookout Mountain	Aermotor MC-24	1933	No - extensive modification new cab, 1965
Bearwallow Mountain	Aermotor LX-24	1923	No - extensive remodeling of windows, roof, wall, and stairs
	cabin	1923	Yes
	cabin	1940	Yes
	privy	1940	Yes
	storage shed	1923/1940	Yes
Negrito Mountain	Aermotor MC-24	1934	No - extensive remodeling of windows, siding and roof
Black Mountain	Aermotor MC-24	1934	No - extensive modification of windows
	cabin	1925	Yes
	metal shed, privy	Unknown	No - too recent
Hillsboro	Aermotor MC-40	1933	Yes
	cabin	1925	Yes
	metal Butler building	Unknown	No - too recent
	fiberglass privy	Unknown	No - too recent
	wood privy/metal shed (privy)	1940	No - modified
El Caso (CCC)	Aermotor MC-24	1934	Yes
	cabin	1934	Yes
	privy	1934	Yes
Signal Peak	Aermotor MC-24	1932	No - extensive modifications, new cab, 1966

Table 9. Summary of Lookouts on Kaibab National Forest

LOOKOUT	TYPE	DATE	ELIGIBLE
Round Mountain	Aermotor MC-39	1960	No - too recent
Bill Williams	Aermotor MC-39	1937	No - extensive remodeling of windows and floors, 1980s
	cabin (CCC)	1938	No - extensive remodeling of roof and siding, 1968
Red Hill	CL-100/106	1958	No - too recent
Jacob Lake	Aermotor MC-39	1934	Yes
Big Springs	Aermotor MC-39	1934	Yes
	cabin	1959	No - too recent
Dry Park	Aermotor MC-39	1944	No - too recent
	cabin	1936	Yes
	2 storage buildings	1936	Yes
Red Butte	CL-100/106	1980	No - too recent
Kendrick	CL-100/106	1964	No - too recent
	cabin	1911	Yes
Volunteer	CL-100/106	1963	No - too recent
	cabin (CCC)	1939	Yes
	storage shed	Unknown	No - too recent
Grandview	Aermotor MC-39	1936	Yes
	cabin (CCC)	1936	Yes
	2 privies	Unknown	No - too recent

Table 10. Summary of Lookouts on Lincoln National Forest

LOOKOUT	TYPE	DATE	ELIGIBLE
Monjeau (CCC)	International Derrick 7 feet square house on stone base	1940	Yes
Dark Canyon	Aermotor MC-99	1948/1949	No - moved
Wofford (CCC)	Aermotor MC-39	1933	Yes
	cabin	1933	Yes
	storage shed	1937	Yes
	radio shed	Unknown	No - too recent
Sacramento	CL-100/106	1968	No - too recent
James Ridge	Aermotor LX-24	1967	No - too recent and moved
Ruidoso (CCC)	Aermotor MI-25	1940	Yes
Bluewater (CCC)	Aermotor LX-24/ International Derrick Co.	1937	Yes
	cabin	1936	Yes
	storage shed	1937	Yes
Weed	Aermotor LX-24	1926	Yes
	radio shed	Unknown	No - too recent
Carrisa (CCC)	Aermotor MC-39	1934/1935	Yes
	cabin	1935	Yes
	storage shed	1937	Yes
	fiberglass privy	Unknown	No - too recent

Table 11. Summary of Lookouts on Prescott National Forest

LOOKOUT	TYPE	DATE	ELIGIBLE
Horsethief	Pacific Coast Steel	1934	No - extensive remodeling of windows, siding, roof
Towers	Pacific Coast Steel	1933	No - extensive remodeling of roofs, siding, windows
Mt. Union	Aermotor MC-24	1933	No - extensive remodeling of windows, roof, siding
	cabin	1933	Yes
	3 radio sheds, privy	Unknown	No - too recent
Mingus (CCC)	Pacific Coast Steel	1935	Yes
	cabin	1935	Yes
	storage shed	1935(?)	Yes
	privy	Unknown	No - too recent
Spruce Mountain (CCC)	Aermotor MC-24	1936	No - extensive remodeling of roof, windows, siding
Hyde Mountain (CCC)	L-4 lookout house	1936	Yes
	storage shed	Unknown	No - too recent

Table 12. Summary of Lookouts on Santa Fe National Forest

LOOKOUT	TYPE	DATE	ELIGIBLE
Clara Peak	Mod. L-4 (?)	1951	No - too recent
Encino	Aermotor MC-39	1933	No - moved
	cabin	1933	No - moved
	log cabin	1933	No - moved
Glorieta Baldy	Aermotor MC-24	1940	Yes
Cerro Delado	CL-100/106	1965	No - too recent
Dome	CL-100/106	1965	No - too recent
Deadman	Aermotor MC-24	1933	No - extensive remodeling of roof & window
Red Top	trailer	1960s (?)	No - too recent
Barrillas	CL-100/106	1959	No - too recent

Table 13. Summary of Lookouts on Tonto National Forest

LOOKOUT	TYPE	DATE	ELIGIBLE
Diamond Point (CCC)	Aermotor MC-24	1936	No - extensive modification of windows
	cabin	1941	Yes
	privy	Unknown	No - too recent
Mt. Ord	CL-100/106	1983	No - too recent
McFadden Park	CL-100/106	1964	No - too recent
Colcord	CL-100/106	1960	No - too recent
Aztec	CL-100/106	1956	No - too recent
Signal Peak (CCC)	Aermotor MC-39	1934	No - extensive modification of windows, stairs, ceiling,
	cabin	1935	No - extensive modifications, rooms added
Humboldt	CL-100/106	1958	No - too recent

Table 14. Summary of Lookouts and Associated Structures

National Forests	No. of Lookouts	Lookout Towers, Houses--Not Eligible	Lookout Towers, Houses--Eligible	Associated Structures Eligible
Apache-Sitgreaves	16	11	5	10
Carson	3*	2	0	1*
Cibola	7	7	0	0
Coconino	12	9	3	3
Coronado	10	3	7	13
Gila	13	9	4	10
Kaibab	10	7	3	6
Lincoln	9	3	6	6
Prescott	6	4	2	3
Santa Fe	8	7	1	0
Tonto	7	7	0	1
Totals	101	69	31	53

* One of the lookout sites on the Carson National Forest has only a cabin, no lookout tower.

APPENDIX A

The following pages reproduce the actual forms used in nomination of the Southwestern Region's lookout sites to the National Register of Historic Places. The forms were prepared by the staff of Cultural & Environmental Systems, Inc. under terms of a contract with the Region. The Principal Investigator was Peter L. Steere.

This Appendix differs from the actual nomination mainly in its omissions. The most conspicuous omissions are the photographs and maps. There is a very high degree of repetition of the photographs in the Evaluation Report and in the actual nomination. It would not be profitable to reproduce the same photos in two places. The USGS maps and sketch maps would represent a considerable added bulk to this book, pages which seem of little value to the general reader. Since the nomination contains only those properties which were found to be eligible in the Evaluation section, the list of properties is somewhat shorter here.

Among the unique information presented in this Appendix is the land net coordinate and boundary information. Coordinates are stated as both Range and Township as well as in Universal Transverse Mercator (UTM) grids, a National Register requirement. A boundary description and formal justification statement appears with each property. Also of some interest is the sketch on page 147 which was provided to aid the Keeper in visualizing major components of a lookout site. Other material of interest will be found in the "Glossary" beginning on page 148 and the "Significance" section of the National Register form beginning on page 192.

When received in the Regional Office, the nomination forms were reviewed by Judith Propper who made some editorial changes. Changes entered during that final review can be identified by the type face used. It is a dot matrix type, somewhat coarser than the one used by Cultural & Environmental Systems, Inc. in their version. No further changes in the text have been made for this edition.

The format used for the lookout nomination is now something of an antique. It may have been one of the last nominations to be processed in this way. It is a multiple property nomination; i.e., one with many related properties described on a single nomination form. If the Forest Service was doing the job today, the nomination would use the thematic approach in which each property is described on a separate National Register nomination form. Another set of forms would then be used to develop the theme which unites the properties.

The approach used here is easier in that far less written material needs to be prepared. The drawback of this, compared to the thematic approach now prescribed by the Keeper, is that rejection of one property for eligibility means rejection of the whole nomination. In this case, The Forest Service had the good fortune of having the nomination accepted as submitted with no need for additions or corrections.

Form No 10-306 (Rev 10-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY – NOMINATION FORM

FOR FEDERAL PROPERTIES

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC
National Forest Fire Lookouts in the Southwestern Region, USDA Forest Service

AND/OR COMMON
National Forest Fire Lookouts in the Southwestern Region, USDA Forest Service

2 LOCATION

STREET & NUMBER National Forest System Lands in the States of Arizona and New Mexico — N/A NOT FOR PUBLICATION

CITY TOWN
N/A — N/A VICINITY OF — CONGRESSIONAL DISTRICT

STATE	CODE	COUNTY	CODE
Arizona New Mexico	04 35	Various See Item 10	See Item 10

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
_DISTRICT	X PUBLIC	X OCCUPIED	_AGRICULTURE	_MUSEUM
X BUILDING(S)	_PRIVATE	X UNOCCUPIED	_COMMERCIAL	_PARK
X STRUCTURE	_BOTH	_WORK IN PROGRESS	_EDUCATIONAL	_PRIVATE RESIDENCE
_SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	_ENTERTAINMENT	_RELIGIOUS
_OBJECT	_IN PROCESS	_YES RESTRICTED	X GOVERNMENT	_SCIENTIFIC
X Thematic Group	N/A BEING CONSIDERED	X YES UNRESTRICTED	_INDUSTRIAL	_TRANSPORTATION
		_NO	_MILITARY	_OTHER

4 AGENCY

REGIONAL HEADQUARTERS *(If applicable)*
USDA Forest Service - Southwestern Region

STREET & NUMBER
517 Gold Avenue, S.W.

CITY TOWN — STATE
Albuquerque — N/A VICINITY OF — New Mexico 87102

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE REGISTRY OF DEEDS, ETC
USDA Forest Service - Southwestern Region

STREET & NUMBER
517 Gold Avenue, S.W.

CITY TOWN — STATE
Albuquerque — New Mexico 87102

6 REPRESENTATION IN EXISTING SURVEYS

TITLE
Inventory of Fire Lookouts

DATE
1986 — X FEDERAL _STATE _COUNTY _LOCAL

DEPOSITORY FOR SURVEY RECORDS
Unit of Recreation, CRM Files, USDA Forest Service-Southwestern Region
517 Gold Avenue, S.W.

CITY, TOWN — STATE
Albuquerque — New Mexico 87102

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
__EXCELLENT	__DETERIORATED	__UNALTERED	X ORIGINAL SITE
X GOOD	__RUINS	X ALTERED	__MOVED DATE_____
X FAIR	__UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

The properties in this thematic nomination comprise USFS fire lookout towers and associated support structures such as cabins, barns, storage sheds, privies, walls and cisterns built between 1905-1942 on National Forest system lands in the states of Arizona and New Mexico. The thematic group includes 31 lookout towers or houses and 51 outbuildings and other structures. Fire lookouts and their support structures are distinguished by a singular planning function, that of fire detection, by several distinctive architectural expressions and by the USDA Forest Service itself.

The properties which represent the physical expression of USFS fire management planning at national and local levels include several different types of lookout towers and a variety of support structures including cabins, barns, storage sheds, privies, walls, cisterns and corrals, most modeled after standard plans developed by the various regional offices of the USFS. All of the buildings are owned by the USDA Forest Service with title residing in the United States.

The general character of the properties' setting is similar; generally high points in remote areas, usually mountaintops in the National Forests of the Southwestern Region. These settings reflect the functional role of lookouts as observation points to detect forest fire.

Survey Methodology

All of the fire lookout sites in the 11 National Forests in the Southwestern Region were inventoried and recorded in a comprehensive survey by USFS personnel. The survey was conducted in 1986 under the supervision of Dr. David Gillio, Archaeologist in the Regional Office, USDA Forest Service, Southwestern Region, Albuquerque, New Mexico. Cultural & Environmental Systems, Inc. (C&ES), was then awarded a contract to develop evaluation criteria and prepare an evaluation report and a thematic National Register nomination. The map shown in Figure 1 provides locational information for the National Forest of the Southwestern Region.

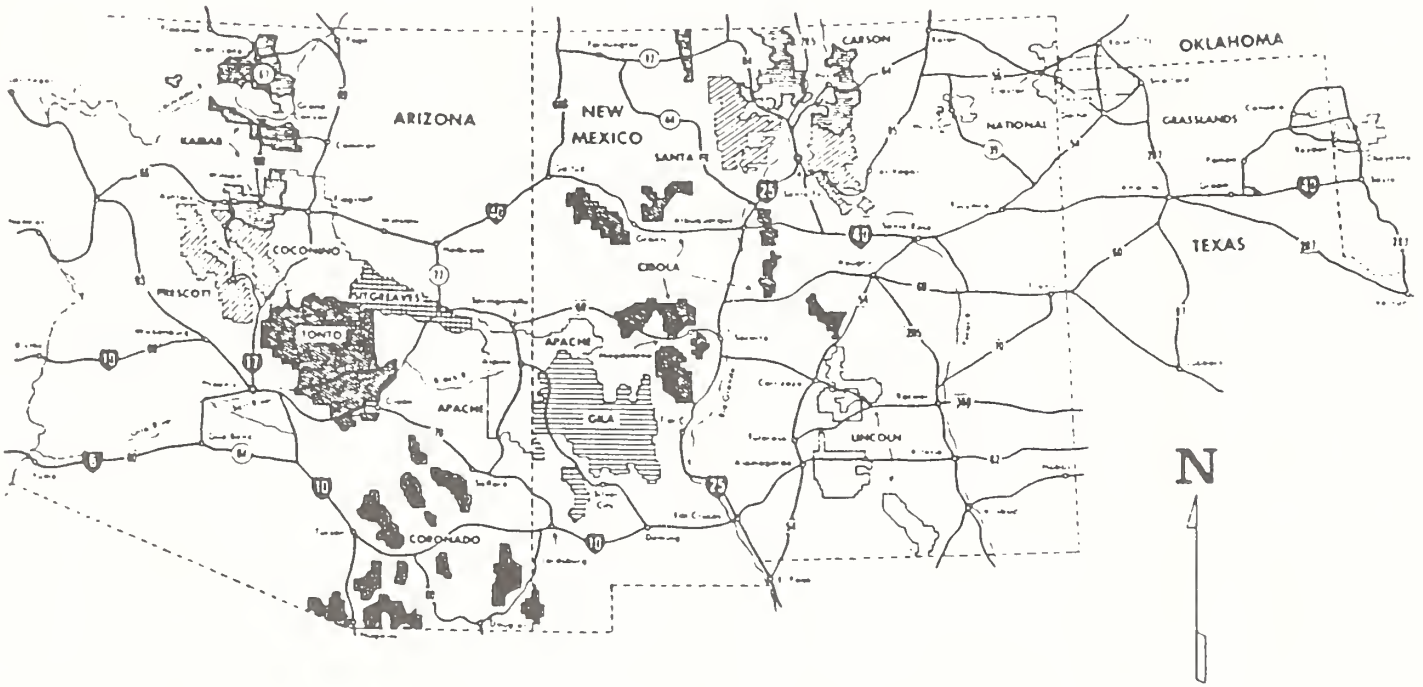


Figure 1. Map showing National Forests of the Southwestern Region.

The principal investigator, Mr. Peter Steere, holds B.A. and M.A. degrees from the University of Montana and has completed course work towards a Ph.D. at the University of Georgia. He has fifteen years experience in historical, archaeological and historic architectural studies for state and federal agencies, private companies and academic institutions in Arizona, Montana, Utah, Idaho, Wyoming, Georgia, North Dakota, South Dakota, Washington, Pennsylvania and Rhode Island. He has completed extensive historical survey projects in Butte, Helena, Jardine, Basin, Bridger, Elkhorn, Wickes and Whitehall, Montana as well as the Tucson Basin area in Arizona that have focused on the survey, location and evaluation of historic buildings and preparation of historical narratives. He has worked on fire lookouts for several summers in Montana and has also served as an archaeologist-historian for the Helena and Deerlodge National Forests in Montana.

C&ES research started its part of the study with a two week visit to USFS regional offices in Albuquerque where copies of the forms and contact sheets of photographs were examined. The Engineering staff group provided photographs and construction plans. All of this material was brought back to the C&ES office (Tucson, Arizona) for close examination and study. In addition, other researchers were contacted, both within the USFS and outside, who have an interest in fire lookouts. The Forest History Society in North Carolina and the history section of the Forest Service in Washington, D.C., were also contacted. The government documents department of the University of Arizona Library was searched for publications regarding lookouts. Dave Gillio had several data base searches done for this project that provided additional reference materials. Several archaeologists working on various Forests in the Southwestern Region provided materials from their offices. All of this material was carefully reviewed to provide as complete a picture as possible of the history of fire lookouts in the Southwestern Region.

For each lookout, the contractor examined a site form and a set of photographs (including, in many cases, historic photographs) of the structure from USFS photographic records. The historic photographs have been useful in detecting structural changes in individual lookouts over time by comparing them with modern photographs. The local histories furnished by some individual forests also proved useful in providing specific information. In addition, standardized lookout structures plans (Figures 2 - 18) were utilized for comparative purposes.

Environmental Setting In Relation to Need for Fire Detection

Arizona and New Mexico represent one of the most varied topographic and scenic areas in North America. Contained within these two states are six World Ecological Formations-classes (Desertscrub, Grasslands, Chaparral, Woodland, Forest and Tundra) and within this system are ten specific subcontinental North American Ecological Formations (Southwestern Desertscrub, Great Basin Desertscrub, Desert Grassland, Plains Grasslands, Mountain Grasslands, Chapparral, Evergreen Woodland, Deciduous Woodland, Coniferous Forest and Alpine Tundra) (Lowe 1964). Many of these formations blend gradually with one another so that the distinction or demarcation between them is often obscured. Each of the formations is characterized by specific biotic communities and further distinguished by particular dominant floral-faunal elements.

The combined factors of elevation and associated precipitation create the gradient responsible for the sequence of biotic communities and life zones. Precipitation in the area encompassed by Arizona and New Mexico occurs in a reasonably predictable biseasonal regime of winter and summer rains. Winter rains, usually of a gentle, widespread and often prolonged character, are carried into the area from the west and northwest on the strong westerlies created by the winter pattern of the jetstream and its action on the atmosphere over the northwest Pacific area. Summer precipitation, usually beginning in late June and continuing through the end of August, occurs in the form of extremely localized and violent thunderstorms of relatively short duration. These rains result from tropical Atlantic (Gulf) air masses which bring large quantities of moist tropical air into the region. Despite these precipitation patterns, the environment of this region is typified by predominantly arid conditions, the degree of which can fluctuate markedly from season-to-season or year-to-year.

Between the biseasonal rains, droughts can occur which often extend into what normally should be a rainy period. A combination of an extended drought and the localized and violent thunderstorms of mid- to late-summer result in the more upland areas, particularly the Mogollon Rim country of the Colorado Plateau, having the largest concentration of lightning fires and the highest frequency of critical fire weather in the United States (Biddison 1977-1979:19-21).

Climatic factors are critical in the understanding and prevention of fire. Specific vegetation and its occurrence across and within environmental zones is also a key factor. In his discussion of fire regimes in Arizona, Humphrey (1964:56-60) describes the key fuel as being grass, a major component of many of the biotic zones in Arizona and New Mexico. For instance, the relationship between desert and grassland is determined largely by the ability of grassy vegetation to carry fire: when drought retards grassland growth, desert vegetation encroaches, but in times of increased rainfall, grasslands expand often through the agency of fire.

Prior to the introduction of cattle and other European cultural transplants in the Southwest, fire probably helped to maintain healthy biotic communities. For example, in 1973, the Tall Timbers Research Station (Biswell 1973, 1-3) identified a natural preserve of ponderosa pine on the San Carlos Apache Reservation that had not been subject to a strict fire protection program. The broadcast fire patterns identified there were felt to represent an ideal example for ponderosa pine management; in other words, no management at all.

Pyne (1982:510-520) feels that the relationship between the grasslands, pine forest, livestock and broadcast fire patterns of the Apache Indians in historic times is a critical factor in understanding fire history in the Southwest.

Livestock was introduced into the Southwest by the Spanish in the seventeenth century and reached such overwhelming numbers in the centuries which followed that severe overgrazing occurred in many areas. Leopold (1949:137-140) observed that overgrazing had severely altered the landscape of the Southwest and attributed it partially to the lack of fire. Overgrazing had drastically reduced the basic fuel that allowed fire to spread and which had played an important role in the regeneration of grasses. The Southwestern Region reflects a vegetative and cultural mosaic that exhibits a variety of fire regimes (Pyne 1982:515-516), many of which are not beneficial. Natural and cultural factors appear to have played an important role in changing the landscape of the region and its fire history.

Organization of Nomination

This nomination is organized in the following manner. Items 1-6 are short answer, self-explanatory items. Item 7, Description, provides information on the present and original physical appearance of the nominated properties. It includes an introductory statement and sections on survey methodology, a map of the National Forests of the Southwestern Region, environmental setting, organization of the nomination, definition of property types, integrity of condition, evaluation criteria, boundary justifications, and a descriptive inventory of all nominted properties organized alphabetically by specific National Forest. Table 1 lists nominated lookout towers by type and nominated associated structures for each National Forest. Table 2 lists nominated properties for each lookout site and the contributing and noncontributing elements.

Item 8 contains a summary statement of significance followed by a discussion of the major historical contexts to which the nominated properties are related. These include: 1) The Forest Service and Fire Detection in the Southwestern Region (1905-1942), 2) The Civilian Conservation Corps and the USFS in the Southwestern Region (1933-1942), 3) Public Land Management and the Conservation Movement (1905-1942, and 4) the Development of a Functionally Specific Architectural Style: Fire Lookout Types, Designs and Equipment (1905-1942). Finally, a justification is presented for the three major significance areas: architecture, conservation and politics and government.

The following appendices are included: a series of field sketch maps of lookouts containing nominated properties; Figures 2-18, a series of architectural plans to illustrate different types of lookouts constructed by the Forest Service throughout the country; Figures 19-167, photographs of nominated properties; and a set of USGS quadrangle maps that show locations of nominated properties.

Definition of Property Type

This nomination focuses on one basic property type: the fire lookout. Included in this property type are the following categories of structures.

1) Lookout Towers. Wooden or more commonly steel towers supporting enclosed observation structures, or cabs. Most surviving lookout towers were built from standard plans. Lookout towers can be divided into two major subtypes:

a) Observation only lookout towers. The majority of towers in the Southwestern Region are steel towers with 7 ft by 7 ft cabs used only for observation. The lookout operators lived elsewhere. A few towers have cabs measuring 12 ft by 12 ft.

b) Live-in lookout towers. These towers are usually not as tall and have larger cabs, typically 14 ft by 14 ft, which can served as living quarters as well as observation structures.

2) Lookout Houses. These live-in lookouts are not supported by towers but are built on the ground, usually on high promontories. Like lookout towers, most were built from standard plans.

3) Associated Structures. Associated structures include cabins, storage sheds, privies, barns, cisterns, walls, and corrals. Cabins, of log or frame construction, were built to provide living quarters for the lookout operators, particularly for those towers with 7 ft by 7 ft cabs. Many associated structures were also built from standard plans. These structures are regarded as an integral part of the lookout site complexes and the activities associated with them.

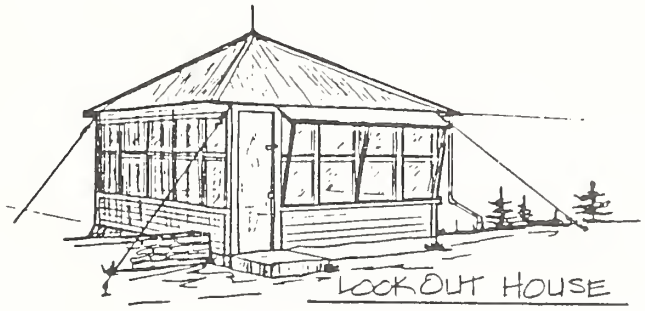
See Item 8 for a discussion of the development of fire lookout architectural styles and types. See Table 1 for a breakdown of fire lookout types included in the nomination.

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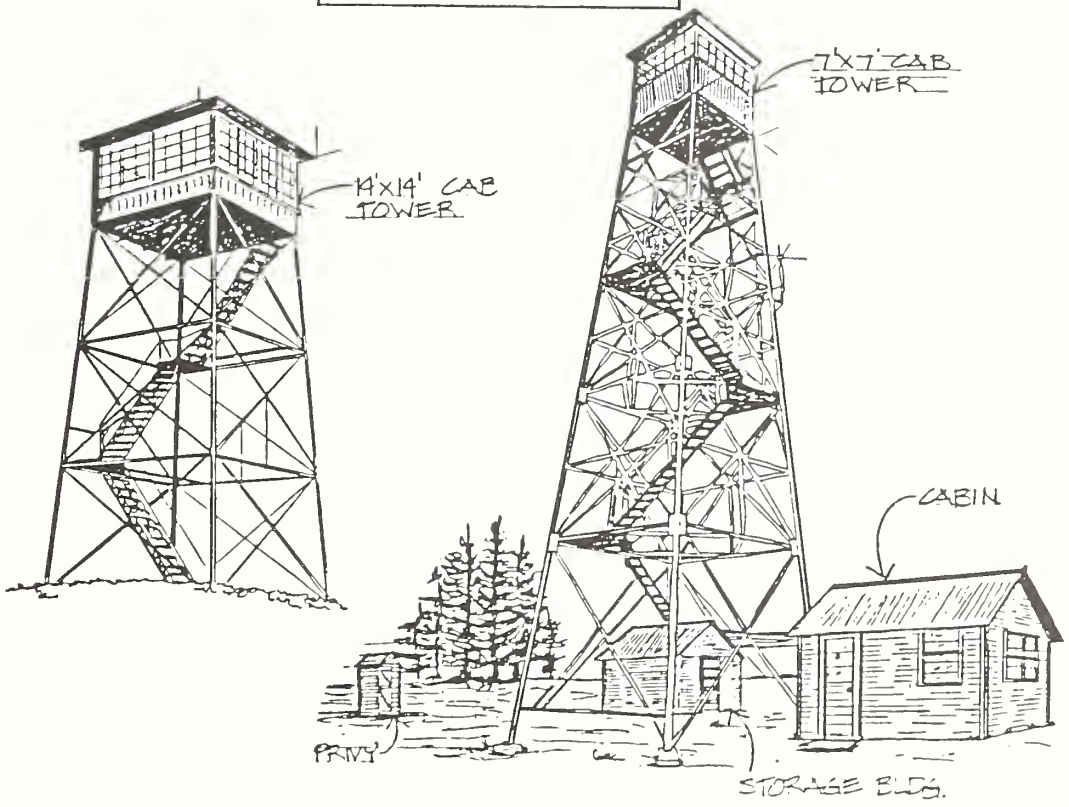
NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

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National Forest Fire Lookouts in the Southwestern Region, USDA Forest Service



EXAMPLES OF FIRE LOOKOUT PROPERTY TYPE



Glossary

Some terms utilized to describe lookouts, outbuildings and equipment are somewhat specialized, hence the following brief glossary is included to assist the reader.

Battered:

Slanting gradually inward from the base; a lookout tower whose support members are not perpendicular with the plane of the ground surface.

Cab:

Refers to a small house or cabin that is situated on the top of the lookout tower. The fire lookout person lives and/or works in these quarters.

Cabin:

Refers to a wood frame or log cabin that generally function as living quarters for the fire lookout person. It is situated on the ground usually in close proximity to the lookout tower.

Catwalk:

Decking around a lookout cab that functioned both as a walkway and observation platform.

Concrete Pier:

Footing for wooden or steel posts which served as a foundation for lookout towers.

Cupola:

A small, usually squarish structure on top of a roof.

Enclosed Tower:

A tower that has been enclosed with some type of siding ususally to provide additional storage or living space.

Gable:

The vertical triangular end of a building from cornice or eaves to roof ridge.

Hip roof:

A roof with ends and sides that slope; most lookout cabs and houses have hip roofs.

House:

A lookout house refers to an observation structure which sits on the ground and is not elevated on a tower.

H-Brace:

Lookout tower cross-bracing forms an H pattern or shape.

K-Brace:

Lookout tower cross-bracing forms a downward pointing K pattern.

Nonbattered:

A lookout tower whose support members are perpendicular to the plane of the ground surface.

X-Brace:

Lookout tower whose cross-bracing forms an x-pattern.

Fire Equipment

Alidade:

A straight edge or pointer attached to the firefinder which turns with it in a graduated circle (360 degrees) for measuring the angle of a fire smoke from the lookout. They may also be fitted in a hole in the map board and rotated along an azimuth ring.

Azimuth Ring:

A circular instrument graduated into a 360 degree circle for measuring the angular distance along the horizon from a north point in any cardinal direction.

Firefinder:

Device used to locate a fire on a map; most common type is the Osborne firefinder developed by W.B. Osborne in 1909.

Fire Guard:

A term used early in the USFS for seasonal employees hired to fight forest fires or serve on lookouts.

Mapboard:

National Forest map cut and glued on wooden board of the firefinder; center of mapboard corresponds to location of lookout.

Primary Lookout:

Lookout used annually during the fire season.

Secondary Lookout:

Lookout site used to provide observation coverage for areas that cannot be seen by the primary lookout.

Smokechaser:

Term used by the USFS history for lookout fireguard.

Visibility Mapping:

The identification of and marking on maps of all areas seen by a particular lookout.

Integrity and Condition

The overall condition of the nominated fire lookouts and associated outbuildings ranges from fair to good. The National Register discussion of integrity in terms of location, design, setting, materials, workmanship, feeling and association (36CFR 60.6) was utilized. The major method for accomplishing this was to compare historic photographs of fire lookouts and associated outbuildings with present-day photographs taken by the USFS. A secondary method utilized was to examine USFS improvement files which detail changes made in various structures on each USFS and the dates they were made. Finally, information from research notes, newspaper clippings, and forest histories was integrated. By combining these three information sources it was possible to make a reasonably clear assessment of the original integrity of each fire lookout and outbuilding. Original integrity represents the condition and physical appearance of the lookout or outbuilding when it was built. The general principle operating in this context was to identify those lookouts that retained the most original integrity since they were built. By utilizing the methods described earlier it was possible to identify those lookouts that had experienced the least modification to individual structures or changes in setting, feeling and association. This is not always a clear one-to-one assessment. There has to be some leeway in interpretation, trying to achieve balance between the seven levels of integrity. Some general rules that were consistently applied included the following:

I. Integrity of Design, Materials and Workmanship - Structural Changes

A) Windows were regarded as a key element in the evaluation of lookout integrity since they represent a large portion of the lookout facade and receive considerable design attention over the years because of their important relationship to observation behavior occurring on fire lookout. Any lookout that had experienced drastic alteration or total replacement of the original windows was felt to have lost much of its structural integrity and generally was not recommended for nomination unless it exhibited exceptional significance in some other areas such as the Monjeau lookout on the Lincoln National Forest whose stone masonry architecture represented the only example of that style in the Southwestern Region.

B) Roof, siding - If the original design and materials were completely altered and/or replaced, the lookout was not recommended for nomination. If the roof and siding had only experienced maintenance in terms of new shingles, paint or replacement with similar materials this was not regarded as compromising integrity in any significant manner.

C) Cab or house - If the original lookout cab or house had been completely replaced by a new or different one, this was regarded as severely compromising integrity and the lookout was not recommended for nomination.

D) Towers - The wooden and steel towers showed little modification over time outside of normal maintenance such as replacement of bolts, anchor wires or repainting. If it could be discovered that a tower had been completely replaced or severely altered (shortened), this was regarded as a severe compromise to the original structural integrity and the lookout was not recommended for nomination.

E) Ladders and Stairways - Many early lookouts originally had stairs as a means of access to the lookout cab. Many of these were replaced over the years for safety reasons. This was such a broad-based change, it is not regarded as significantly compromising structural integrity. Some lookouts with nonoriginal stairs still retain the original ladder. Many of the Aermotor towers originally had stairs depending on the exact style. A few had ladders which were replaced by stairs. Normal maintenance of ladders and stairs that might include repainting and replacement of rusted bolts, bracing or steps was not regarded as a significant compromise to structural integrity.

F) Lookout Interiors - The interiors of lookout cabs or houses were not considered as part of this evaluation process.

G) Additions - additions to lookout towers frequently were related to communication antennae or dishes placed on the exterior of the cab or lookout house. In most circumstances, these additions were not regarded as severe compromises to the original structural integrity. They were felt to represent an inevitable

manifestation of the improvement in communications equipment. Lookout telephones were replaced by a series of improving radios. The changes in the receiving devices for these radios were a normal process of equipment improvement. A few lookouts that had experienced extensive changes by adding many antennae or dishes to cover the roof or sides of the cab or house were evaluated as more severely impacting original structural integrity. The additions of solar panels to provide energy on a few lookouts was regarded as having a more severe impact on the original structural integrity, but were not used as a sole factor to cause a lookout not to be recommended for nomination.

In many cases, those lookouts that were not recommended for nomination exhibited many severe changes, alterations and total replacements of structural members. Alteration and/or replacement of items that severely altered the original design were regarded as serious impacts an original structural integrity. The total replacement or severe alteration of a roof, window panels, siding or the tower itself would bean example while the lookout house or cab that retained most or all of its original structural design integrity, but had a few extra antennae,dishes or solar panels added was not regarded as having had its original structural integrity severely compromised.

2) Integrity of Location, Setting, Feeling and Association - Non-Structural Changes

These changes in integrity were somewhat more subjective and hence were difficult to evaluate. Location generally is regarded as referring to whether the structure is in its original location. Any lookout that was not in its original location where it was built was regarded as having lost its integrity of location and was not recommended for nomination. There were a few exceptions to this general rule of exclusion. A lookout that had been moved to its present location more than 50 years ago and had continued to function as a fire lookout for that entire period of time was exempted from disqualification under the location integrity.

Changes in integrity of setting were fairly easy to evaluate. Any lookout site that had experienced the addition of two or more non-Forest Service structures usually in the form of commercial microwave communication towers was regarded as having had its integrity of setting compromised and was not recommended for

nomination. The addition of a few Forest Service communication towers, a new weather station, modern storage shed or privy were not regarded as severe compromises to integrity of setting but were frequently viewed as replacements of deteriorated structures or additions directly related to the function and purpose of the lookoutsite.

Integrity of feeling is a more subjective matter and somewhat difficult to evaluate. It was not regarded as a primary factor in this study. If a lookout site had lost its original integrity of feeling (how it was when it was first constructed) it most frequently occurred because one or more ofthe other six types of integrity had been severely impacted. Hence a lookout built in 1934 that had its cab replaced in 1944, its tower shortened in 1951, had experienced the construction of a dozen private microwave towers all within a few hundred meters or so and had a paved two-lane freeway type of road built to provide access was regarded as having lost its integrity of feeling. Most lookouts were evaluated for integrity of feeling on a continuum that took all factors into consideration that contribute to a sense of feeling.

Evaluation Criteria

In order to determine those lookouts or associated structures which might be eligible for inclusion in the thematic nomination to the National Register of Historic Places, a series of evaluation criteria (based on the National Register criteria of significance), was employed. Those lookouts or associated structures eligible for the thematic group nomination must:

1) be associated with events that have made a significant contribution to the broad patterns of our history (36CFR60.6(a));

2) embody the distinctive characteristics of a type, period or method of construction (36CFR60.6(d));

3) be constructed prior to 1943 or, if more recent, demonstrate exceptional significance. Although fifty years is the generally accepted cutoff age for National Register eligibility, the era from 1933 to 1942 is viewed as a cohesive period. In fact, historians (Otis 1986; Paige 1985; Degler 1970; Salmond 1967; and Wirth 1980) have focused much attention in

recent years on the Great Depression, the Roosevelt administration with its New Deal policies and the many agencies created in this period to meet the social needs of the American people. The CCC, probably the best remembered and most successful of all New Deal programs, had a strong influence on USFS fire management policies by providing more personnel for fire crews and through the constuction of new fire lookouts. Many of the fire lookouts described in this report were constructed by CCC crews between 1933 and 1942, when the CCC was terminated. Because of the strong association between the CCC and fire lookouts, it is felt that the fifty year cutoff for National Register nomination should be waived and the time period extended to 1942. The CCC represents an important historic context for the significance of many of the fire lookout facilities.

4) possess integrity from the historic period in which it was constructed. To be significant, the lookouts or associated structure must have integrity of location, design, setting, materials, workmanship, feeling and association (36CFR Section 60.6). This means that a lookout or associated structure must have experienced only minor modification since construction and, in most circumstances, they cannot have been moved from their original location.

All fire lookouts in the Southwestern Region of the Forest Service, regardless of construction type, have some significance in relation to the four historic contexts discussed earlier. The lookouts all appear to have been associated with events that have made a significant contribution to the broad patterns of our history and embody distinctive characteristics of a type, period or method of construction. Therefore, the evaluation criteria of age and integrity remain as the primary factors which can be utilized to distinguish between those fire lookouts which are considered eligible and those which are not.

Boundary Justification

Boundaries were determined based on locational information provided on USFS field maps. They were selected to encompass the full extent of the resources making up the property. Most of the lookout sites are

one acre or less in size, with only a few exceeding this figure. Each boundary determination was made to include all of the eligible structures at the site. For the typical lookout site this would generally include the lookout tower and associated structures and outbuildings. Individual boundary descriptions are contained in the following inventory and description section of the nomination.

In some cases, where the lookout was nominated and the associated structurs were not, the boundary would be a small square surrounding the tower. On the other hand, if a cabin was nominated and the lookout was not. the boundary souare would surround the cabin. In the case of a complex including lookout tower, outbuildings and other structures, an arbitrary square or rectangle was drawn to include all of the eligible structures.

Inventory and Description of Nominated Fire Lookouts in the Southwestern Region

The information presented in this section is based on the inventory conducted by the Forest Service during the summer of 1986. A total of 101 lookout sites were recorded. Sixty-seven lookout sites are excluded from the thematic nomination because they were built too recently or have lost integrity due to extensive remodeling or having been moved. One lookout was found to be located on private property and was excluded. Thirty-one lookout towers or houses are included in this thematic nomination as well as 53 outbuildings and other structures including cabins, storage sheds, privies, barns, corrals, cisterns and walls. The descriptions that follow, by National Forest, include only those lookouts which contain structures recommended for National Register eligibility.

All of these lookouts are eligible for the National Register under Criteria a and c. They also possess integrity of design, construction, location, setting, materials, workmanship and feeling and association. All of these lookouts have significance in relationship to four major interrelated historic contexts as well as representing a specific architectural style. These are discussed in detail in Section 8.

Apache-Sitgreaves National Forests

The Apache and Sitgreaves National Forests are administered as one National Forest from Springerville, Arizona. The combined area of the two National Forests contains over two million acres in east-central Arizona. Part of the Black Mesa Forest Reserve was set aside on August 17, 1898 and became the Apache National Forest on July 1, 1908. The Sitgreaves National Forest was created on July 1, 1908 from portions of the Black Mesa and Tonto National Forests. The Sitgreaves National Forest was named for Captain Lorenzo Sitgreaves, a government engineer, who conducted surveys through the area in the 1850s. The Apache National Forest is named for the Native American group that utilized the area from proto-historic times to the present. This Forest has been an important timber producer, contains valuable water supplies and is utilized for livestock and recreation.

PS Knoll Lookout Complex (Figures 19 - 25) (SE 1/4, Section 9, T4N R28E) UTM: 12/672350E/3711750N Apache County, Arizona

Located on the Alpine Ranger District, this 45 ft 9 in high steel tower has a steel cab. This tower is an Aermotor Company MC-40 and was probably constructed by the CCC in 1933. The PS Knoll complex also includes a wood frame dwelling (Plan B-26) and a wood-frame storage shed (Plan B-6001) both constructed in 1939 and a wood-frame privy (Plan U-10) constructed in 1940. Comparison with historic photographs taken in the early 1940s indicates that no remodeling has occurred on any of the structures at this site. The entire complex has retained its original integrity of design, construction, workmanship, materials, location, setting and association and is recommended for National Register eligibility. The boundary of the PS Knoll lookout complex is a square which measures 120 ft by 120 ft with the tower at the southeast corner of the property. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Bear Mountain Lookout Complex (Figures 26 - 36) (NW 1/4, Section 4, T2N R31E) UTM: 12/672350E/3711750N Greenlee County, Arizona

This Aermotor MC-24 steel tower, located on the Alpine Ranger District, was constructed in 1933, probably by the CCC. It is 45 ft 9 in high and has a 7 ft by 7 ft steel cab. The storage shed (an old cabin) was built in 1928. The present cabin and privy were built in 1940. There was a wooden platform tower at this location in the early 1920s. The lookout complex is situated within a primitive area and is also the location of a prehistoric shrine site. The setting is evocative of the "early days" of the Forest Service according to the site recorder. Comparison with historic photographs from the late 1930s indicates that lookout and outbuilding have not undergone any significant structural change. The entire complex retains its original integrity of design, construction, workmanship, materials, setting, location and association and is recommended for National Register eligibility. The boundary of the Bear Mountain complex is a rectangle which measures 300 ft N-S by 200 ft E-W with the tower located immediately north of the halfway point on the south boundary. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Lake Mountain Lookout Complex (Figures 37 - 39) (SE 1/4, Section 23, T9N R24E) UTM: 12/613520E/3780140N Apache County, Arizona

Also located on the Lakeside Ranger District, this 48 ft high Aermotor LX-24 steel tower has a 7 ft by 7 ft steel cab and was constructed in 1926. Study of historic photographs indicates that while the original ladder was replaced in the 1930s, the lookout and its associated cabin (also built in 1926) have retained their original integrity of design, construction, workmanship, materials, setting, location and association. The lookout complex is associated with the Los Burros Ranger Station site, which is already listed on the National Register. The lookout complex at Lake Mountain is recommended for National Register eligibility. The boundary of the Lake Mountain lookout complex is a rectangle which measures 180 ft N-S by 260 ft E-W with the flagpole situated just east of the centerpoint of the west (N-S) boundary. The privy, of unknown date, is a noncontributing property within the boundary. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Deer Springs Lookout Complex (Figures 40 - 42) (SW 1/4, Section 34, T11N R14E) UTM: 12/553350E/3796100N Navajo County, Arizona

Located on the Heber Ranger District, this 50 ft high Aermotor LL-25 steel tower has a 7 ft by 7 ft steel cab and was built in 1923. This is the oldest lookout on the Apache-Sitgreaves National Forests. The associated cabin was also built in 1923. The Aermotor LL-25 was not a common type. Only two examples of this type exist today in the Southwestern Region. Examination of historic photographs from the early 1930s indicates only minor maintenance modifications. The lookout tower and cabin, retaining their original integrity of design, construction, workmanship, materials, setting, location and association, represent rare and unusual types. Both the lookout tower and cabin are recommended for National Register eligibility. The boundary of the Deer Springs lookout complex is a rectangle which measures 130 ft N-S by 100 ft E-W with the tower situated within the northeast corner of the property. The privy, of unknown date, is a noncontributing property within the boundary. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Promontory Butte Lookout Complex (Figures 43 - 46) (SW 1/4, Section 5, T11N R13E) UTM 12/498900E/3802700N Coconino County, Arizona

Located on the Chevelon Ranger District, this 110 ft high Aermotor LS-40 steel tower with a 7 ft by 7 ft steel cab was erected in 1924. It replaced a 110 ft high wooden platform built in 1913 . The associated cabin and storage shed were also built in the early 1920s. When the present tower was built, it was the highest in the countru. The original ladder was replaced with stairs in 1938. The interior paneling was whitewashed in 1966 and a decorative motif was burned in with local cattle brands. This modification has not had a negative impact on the property. Examination of historic photographs from the 1920s indicates that this lookout and associated cabin and shed have retained their original integrity of design, construction, workmanship, materials, location, setting and association. The lookout, cabin and storage shed are recommended for National Register eligibility. The boundary of the Promontory lookout complex is a rectangle which measures 160 ft N-S by 220 ft E-W with the flagpole situated approximately 40 ft from the southwest corner on the south boundary line. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Carson National Forest

Named for Kit Carson, noted frontier explorer and scout, the Carson National Forest has its administrative headquarters at Taos, New Mexico. The Carson National Forest contains 1.3 million acres and was established on July 1, 1908. It was created by the consolidation of Taos Forest Reserve (1906) and part of the Jemez National Forest. It contains within its border the Sangre de Cristo Mountains, part of the Pecos Wilderness and many important prehistoric sites.

Canjilon Mountain Lookout Cabin (Figures 47 - 49) (SE 1/4, Section 13, T27N R5E) UTM: 13/379150E/4047600N Rio Arriba County, Mexico

Located on the Canjilon Ranger District, this site no longer has a lookout tower. It had a wooden tower with a platform that was abandoned in 1922, after several lightning strikes occurred, one of which killed the lookout guard in front of his family. The Canjilon District was established in 1909 and the lookout tower constructed

shortly after that date. The only remains of the tower as of the present inventory were a few stacked spruce poles. The wood-frame cabin measures 10 ft by 14 ft, has a green exterior, a pitched tin roof and interior walls that are painted half green and half white. The bunk bed constructed of spruce poles remains in the cabin. The interior and exterior walls are built of 1 in x 6 in rough lumber. The cabin foundation is cement. All of the window glass is gone. The floor needs a few new boards. The door is missing. The walls are in fairly good condition although covered with graffiti. This lookout cabin represents the oldest standing fire detection structure in the Southwestern Region with the possible exception of some lookout trees. The cabin has retained its original integrity of design, construction, workmanship, materials, setting, location and association and is recommended for National Register eligibility. The boundary of the Canjilon lookout cabin is a square measuring 40 ft by 40 ft with the cabin at the center. The area surrounding the cabin within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Coconino National Forest

The Coconino National Forest consists of 1.8 million acres in the Arizona mountain country around Flagstaff. It contains extensive ponderosa pine forests, mountain lakes and many deep canyons. The National Forest stretches from Camp Verde in the south to the San Francisco Mountains in the north and to Mormon Lake in the west. This National Forest supports extensive timbering, grazing and recreation. Arizona's tallest mountains (the San Francisco Peaks), Humphrey, Agassiz, Fremont and Doyle, are all located on the Coconino National Forest. The San Francisco Mountains Forest Reserve was established on August 17, 1898. On July 2, 1908, the Coconino National Forest was established from the San Francisco Mountains Reserve and parts of the Black Mesa, Tonto and Grand Canyon Forest Reserves.

Moqui Lookout Cabin (Figures 50 - 52) (SE 1/4, Section 27, T14N R11E)
UTM: 12/484785E/3824550N Coconino County, Arizona

Located on the Blue Ridge Ranger District, the lookout tower was constructed in 1952. It represents a USDA Forest Service Standard Plan CL-100 to CL-106 series type. The steel cab measures 14 ft by 14

ft and sits on an 83 ft high, v-brace steel tower. This is the tallest lookout on the Coconino National Forest. It replaced an Aermotor tower built in 1930. The lookout tower is less than 50 years old, does not represent an exceptional type and is not recommended for National Register eligibility. The cabin constructed in 1932 sits on a rock masonry foundation. It is a wood-frame construction with 2 by 8 joists, 1 by 4 decking, 2 by 4 wood rafters, 1 by 3 bevel siding and a corrugated steel roof. Comparisons of historic photographs indicate that the cabin has experienced only minor maintenance modification over the years. This cabin was built to provide living quarters for the fire guard who manned the early Aermotor tower at this site. The cabin has retained its original integrity of design and construction and is recommended for National Register eligibility. The boundary of the Moqui lookout cabin is a square which measures 40 ft by 40 ft with the cabin at the center. The area surrounding the cabin within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Woody Mountain Lookout Tower (Figures 53 - 55) (Section 3, T20N R6E)
UTM: 12/431755E/3888880N Coconino County, Arizona

Located on the Flagstaff Ranger District, this 46 ft high tower with a 7 ft by 7 ft steel cab was designed by the Pacific Coast Steel Company and erected by Charles Lochman and his CCC crew in 1936. This mountain was one of the two original lookout sites on the Coconino National Forest. From 1910 to 1921, fire guards climbed a lookout tree to detect fires. A wooden tower was built in 1922 and was replaced by the present structure in 1936.

On 22 September 1986, the Flagstaff District of the Coconino National Forest held a ceremony to celebrate the fiftieth anniversary of its construction. Former lookout personnel who had worked on Woody Mountain were invited to the ceremony for the presentation of a bronze plaque which reads:

> Dedicated to the men and women who have served since 1910 at Woody Mountain Lookout and to Charles Lochman who in 1936 supervised the construction of this tower.

There has been no major structural modification to this tower over the last 50 years. The lookout tower retains its original integrity of

design, structure, location, workmanship and materials; represents an exceptional type; and is over 50 years of age. It is recommended for National Register eligibility. The cabin, built in 1982, and associated outbuildings are not eligible. The boundary of the Woody Mountain lookout tower is a square which measures 40 ft by 40 ft with the tower at the center. The area surrounding the tower within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Mormon Lake Lookout Cabin (Figures 56 - 57) (NE 1/4, Section 3, T17N R9E) UTM 12/460860E/3860360N Coconino County, Arizona

This lookout is located on the Mormon Lake Ranger District and was erected in 1927. The steel tower is 50 ft high and has a 7 ft by 7 ft steel cab. It is an Aermotor LX-24 type. This lookout replaced a 1915 wooden tower. The associated wood frame cabin was built in 1928. The interior of the cabin was constructed using 2 by 4 studs, while the siding is shiplap pine. Study of historic photographs indicates that modification of the original windows in the tower has occurred. The cabin has experienced no major modifications. The cabin is a standard plan similar to the cabin at the East Pocket lookout. The lookout tower has lost its original integrity of design, construction, workmanship and materials due to the window replacement and is not recommended for National Register eligibility. However, the lookout cabin has retained these integrity factors and is recommended for National Register eligibility. The boundary of the Mormon Lake lookout cabin is a rectangle which measures 80 ft N-S by 80 ft E-W centered on the cabin. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Buck Mountain Lookout Tower (Figures 58 - 59) (SE 1/4, Section 20, T15N R9E) UTM: 12/461990E/3835980N Coconino County, Arizona

Located on the Long Valley Ranger District, this 30 ft high CT-2 wooden x-brace tower has a 14 ft by 14 ft L-4 wood cab on top. It was built in 1939, probably by a CCC crew. The steps were slightly altered in 1953. The timbers were treated for preservation in 1967

and the roof was reshingled in 1983. These modifications have not had a negative impact on the property. This represents the best example of a surviving CT-2 type tower in the Southwestern Region. The only other CT-2 type is East Pocket Lookout, also on the Coconino National Forest. Historic photographs indicate that Buck Mountain lookout has retained its integrity of original design, construction, workmanship, materials and location. The lookout tower is 48 years old, but falls within the 1942 cutoff date for this historical period. It represents an exceptional type in that it is the only extant example in the Southwestern Region on USFS property of a CT-2 type tower and is recommended as eligible for the National Register. A more recent storage shed and privy of unknown date are not eligible. The boundary of the Buck Mountain lookout tower is a square which measures 60 ft by 60 ft with the tower at the center. The area surrounding the tower within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Lee Butte Lookout Tower and Cabin (Figures 60 - 63) (Section 22, T17N R8E) UTM: 12/450970E/3854610N Coconino County, Arizona

This 45 ft 9 in high steel tower with a 7 ft by 7 ft steel cab is located on the Mormon Lake Ranger District and was built in 1933. It represents the only example of an International Derrick and Equipment Company steel tower in the Southwestern Region. The accompanying wood-frame cabin was also built in 1933. Historical photographs indicate that no major modifications have occurred to either the lookout tower or the cab. Both the tower and cabin are more than 50 years old and retain integrity of original design, construction, location, materials and workmanship and both are recommended for National Register eligibility. A more recent shower house and trailer are not eligible. The boundary of the Lee Butte lookout historic portion of the complex is a rectangle which measures 30 ft N-S by 60 ft E-W with the northeast corner of the cabin situated just inside the northeast boundary edge. The area surrounding the historic portion of the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Coronado National Forest

The Coronado National Forest includes over 1.2 million acres of predominantly mountainous terrain within the basin and range country of southeastern Arizona. The region is characterized by isolated mountain ranges that rise from the savannahs. Some peaks reach over 9000 ft. The Coronado National Forest has a complex administrative history. In November of 1906, the Baboquivari, Huachuca and Tumacacori Forest Reserves were created. These three forests were consolidated into the Garces National Forest in 1908. In 1902, the Santa Rita and Santa Catalina Forest Reserves were created. In 1907, the Dragoon National Forest was created. On July 2, 1908, the Santa Rita, Santa Catalina and Dragoon National Forests were consolidated under the name of the Coronado National Forest, with Garces National Forest added in 1911.

Atascosa Lookout House (Figures 64 - 65) (SE 1/4, Section 18, T23S R12E) UTM: 12/486100E/3476120N Santa Cruz County, Arizona

This lookout house is located on the Nogales Ranger District and was erected in 1930 or 1933 by the Forest Service. The lookout is no longer being used as a fire detection facility but is now a rest area for hikers. This lookout is an L-4 type wooden house with dimensions of 14 ft by 14 ft. Historic photographs indicate minimal modification since 1933. The lookout is accessible by trail only. The associated outhouse and stone cistern were also built in 1933 and show no modification. This lookout house, cistern and outhouse have retained their integrity of original design, construction, workmanship, materials, setting, location and association and are recommended for National Register eligibility. The boundary of the Atascosa lookout house is a square which measures 60 ft by 60 ft with the lookout house in the northeast corner. The area surrounding the lookout house within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Barfoot Lookout Complex (Figures 66 - 69) (NE 1/4, Section 33, T17S R30E) UTM: 12/663275E/3532280N Cochise County, Arizona

Barfoot lookout is located on the Douglas Ranger District and was built in 1935, possibly by a CCC crew. The lookout house is an L-4

type wooden house measuring 14 ft by 14 ft. This complex also includes a wood frame shed, privy, concrete cistern and an attractive, rustic style native stone retaining wall. The lookout complex represents one of the best examples of its type in the Southwestern Region. Study of historic photographs indicates no major modifications have occurred to any of the structures at this complex since they were built. The lookout house and other structures have all retained their integrity of original design, construction, workmanship, materials, setting, location and association and the entire complex at Barfoot is recommended for National Register eligibility. The boundary of the Barfoot lookout complex is a square which measures 80 ft by 80 ft. The retaining wall comprises the west edge of the boundary and the northwest corner of the boundary is located 25 ft north of the northernmost railing post (near the southwest corner of the lookout). The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Lemmon Rock Lookout House (Figures 70 - 71) (NE 1/4, Section 35, T11S R15E) UTM: 12/519850E/3588475N Pima County, Arizona

This L-4 type, a 14 ft by 14 ft wood frame lookout house erected in 1928, is located on the Santa Catalina Ranger District and is the second oldest lookout on the Coronado National Forest. There are no intrusions at this site which is accessible only by trail. The lookout is situated on a rock bluff. Study of historic photographs indicates that there have been no major modifications to the Lemmon Rock lookout house. This lookout is over 50 years old and retains its integrity of original design, construction, materials, workmanship, setting, location and association and is recommended for National Register eligibility. The boundary of the lookout house is a rectangle measuring 120 ft N-S by 40 ft E-W with the lookout house located in the southeast corner. A more recent privy of unknown date is a nonconforming structure within the boundary.

Webb Peak Lookout Tower (Figures 72 - 74) (Section 30, T8S R24E) UTM: 12/601030E/3619620N Graham County, Arizona

Located on the Safford Ranger District, this Aermotor MC-40 steel tower is approximately 45 ft high and has a 7 ft by 7 ft steel cab. It was erected in 1933, possibly by a CCC crew. The existing cabin was

constructed in the early 1960s and is not eligible for the Register. The original cabin was removed in 1968. Historic photographs indicate that no major structural changes have occurred to the lookout tower since it was erected. This lookout is over 50 years old, retains its original design, construction, workmanship, materials, setting, location and association and is recommended for National Register eligibility. A more recent privy of unknown date is not eligible. The boundary of the lookout tower is a square measuring 40 ft by 40 ft with the tower at the center. The area surrounding the tower within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

West Peak Lookout Tower (Figures 75 - 77) (SW 1/4, Section 18, T8S R23E) UTM: 12/590175E/3622420N Graham County, Arizona

Located on the Safford Ranger District, this 45 ft high Aermotor MC-40 steel lookout tower has a 7 ft by 7 ft steel cab and was erected in 1933 by a CCC crew. The original log cabin associated with this lookout was removed in 1959 and replaced by a modern structure which is not eligible for the National Register. Study of historic photographs reveals that no major structural changes have occurred to the tower. This tower is over 50 years of age, retains its integrity of original design, construction, workmanship, materials, setting, location and association and is recommended for National Register eligibility. A more recent privy of unknown date is not eligible. The boundary of the West Peak lookout tower is a square measuring 40 ft by 40 ft with the tower at the center. The area surrounding the tower within the boundary is not considered a "buffer area", but is integral to the setting of the property (see attached map).

Heliograph Lookout Complex (Figures 78 - 83) (SE 1/4, Section 13, T9S R24E) UTM: 12/607960E/3612880N Graham County, Arizona

This 99 ft high steel tower lookout is an Aermotor MC-40 with a 7 ft by 7 ft steel cab. Located on the Safford Ranger District, it was erected by a CCC crew in 1933. The log cabin, wood frame barn and privy were also constructed in 1933. A room was added to the cabin in 1978 in keeping with its rustic style. This lookout tower is the highest one on the Coronado National Forest. With the exception of the room addition to the cabin, the original structures at this site have retained their integrity of design, construction, workmanship,

materials, setting, location and association. All of these structures are over 50 years old and the entire complex is recommended for National Register eligibility. A communications building, a recent addition to the complex, is a noncontributing structure within the boundary. A television power house, also a recent addition and not eligible for the National Register, is located outside the boundary. The boundary of the Heliograph lookout complex is a rectangle measuring 120 ft N-S by 260 ft E-W with the tower located in the southeast corner of the property. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Monte Vista Lookout Cabin (Figures 84 - 86) (Section 32, T28S R30E)
UTM: 12/659500E/3522100N Cochise County, Arizona

This lookout, erected in 1966 and therefore not eligible for nomination, is a USDA Forest Service Standard Plan CL-100 to CL-106 series type. It is located on the Douglas Ranger District. The tower is a 41 ft high steel tower with a 14 ft by 14 ft steel cab. This lookout replaced an earlier Aermotor tower erected in 1922 or 1923. The log cabin with dovetail notching was built in the early 1930s, probably by the CCC. The cabin is in excellent condition and retains its integrity of original design, construction, workmanship, materials, location, setting and association. The cabin is recommended for National Register eligibility. A metal storage shed and privy are more recent additions to the complex and nore not eligible. The boundary of the Monte Vista lookout cabin is a square which measures 40 ft by 40 ft with the cabin at the center. The area surrounding the cabin within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Silver Peak Lookout Complex (Figures 87 - 93) (NW 1/4, Section 32, T27S R31E) UTM: 12/670325E/3531200N Cochise County, Arizona

This lookout house, an L-4 type located on the Douglas Ranger District, was erected in 1938 by a CCC crew. It is situated on top of a rocky knob. This wood frame construction measures 14 ft by 14 ft. There are associated buildings including an outhouse and storage shed, both are wood frame construction with tongue and groove exterior. There also is a water cistern with a catchment drain extending from the roof of the lookout house. This lookout complex has suffered no

modern intrusion and has retained remarkable integrity of original design, construction, workmanship, materials, location, setting and association. The entire complex is recommended for National Register eligibility. The boundary of the Silver Peak lookout complex is a rectangle measuring 110 ft N-S by 80 ft E-W with the storage shed located in the southeast corner of the property. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Gila National Forest

The Gila National Forest encompasses over three million acres of forest and range land in southwestern New Mexico. The Gila Forest Reserve was created on March 2, 1899. The Big Burros Forest Reserve was created on February 6, 1907. On June 18, 1908 the Big Burros and Gila Reserves were consolidated to form the Gila National Forest. In 1931 a portion of the Datil National Forest was added to the Gila National Forest. The Gila Wilderness area, the first in the United States, was established in 1924 and lies within the National Forest. The mountain ranges in the Gila National Forest include the Mogollons, the Tularosas, the Diablos and the Black Range. Important resources of this National Forest include timber, water, forage for grazing and many recreation areas.

Mogollon Baldy Lookout Cabin (Figures 94 - 96) (NW 1/4, Section 10, T12S R17W) UTM: 12/724120E/3683780N Catron County, New Mexico

Located on the Wilderness Ranger District, this 30 ft high Aermotor MI-25 steel tower has a 14 ft by 14 ft wood cab. The lookout was constructed in 1948. This location has been utilized for fire detection activity since at least 1913 when fires were located by a protactor on top of a stump. A wooden tower was built in 1917 and the top platform enclosed in 1921. The wooden tower was replaced by the present steel tower. Adjacent to the lookout tower is a log cabin built in 1923. Study of historic photographs indicates that no major structural changes have occurred to either building. The tower represents a rare Aermotor type, but it is less than 50 years old and does not fall within the 1942 cutoff date. However, the cabin retains excellent integrity of original design, construction, workmanship, materials and setting and is recommended for National Register eligibility. A more recent metal privy is not eligible. The boundary

of the Mogollon Baldy lookout cabin is a square which measures 60 ft by 60 ft with the cabin at the center. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Mangas Mountain Lookout Complex (Figures 97 - 100) (Section 16, T3S R14W) UTM: 12/748620E/3771000N Catron County, New Mexico

Located on the Quemado Ranger District, this lookout tower was erected in 1934. It is an Aermotor MC-24, 30 ft high steel tower with a 14 ft by 14 ft steel cab. The wood frame cabin was erected in 1934. The lookout tower and cabin show few modifications over time and retain much of their integrity of original design, construction, workmanship, materials, setting, location and assocation. The tower and cabin are over 50 years old and are recommended for National Register eligibility. A metal privy, a recent addition to the complex, is a noncontributing structure within the boundary. The boundary of the Mangas lookout complex is a rectangle which measures 120 ft N-S by 320 ft E-W with the tower in the northeast corner of the property. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Reeds Peak Lookout Tower (Figures 101 - 102) (SW 1/4, Section 23, T13S R10W) UTM: 13/233780E/3670600N Grant County, New Mexico

Located on the Mimbres Ranger District, this 48 ft high Aermotor LX-24 steel tower has a 7 ft by 7 ft steel cab and was erected in 1929. New stairs were added in 1965, but the original ladder is still in place. The original cabin was replaced in 1959. The tower retains its integrity of original design, construction, workmanship, materials, setting, location and association and is over 50 year old and is recommended for National Register eligibility. A cabin built in 1959, a storage shed and a privy are of more recent construction and are not eligible. The boundary of the Reeds Peak lookout tower is a square which measures 40 ft by 40 ft with the tower at the center. The area surrounding the tower within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Bearwallow Mountain Lookout Cabins and Shed (Figures 103 - 106) (SW 1/4, Section 11, T10S R18W) UTM: 12/716810E/3703340N Catron County, New Mexico

Located on the Glenwood Ranger District, this lookout was erected in 1923. This lookout is an Aermotor LX-24, 35 ft high with a 7 ft by 7 ft wood cab. The upper log cabin was built in 1923 and the lower cabin, formerly a barn, and the privy were erected in 1940. A storage shed also of log construction is of the same vintage as the cabins and probably dates to 1923. The lookout tower has been extensively remodeled. The original windows were completely replaced, new stairs installed and the roof and exterior walls covered with steel in 1984. The two log cabins show few changes since their construction. Both log cabins and the log shed have retained their integrity of original design and both are recommended for National Register eligibility, while the lookout is not, as it has been so extensively remodeled and has lost its integrity of design, workmanship and materials. The boundary of the Bearwallow lookout complex is a rectangle which measures 150 ft N-S by 500 ft E-W with the lower cabin at the southeast corner of the property. The lookout tower is a noncontributing property within the boundary. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Black Mountain Lookout Cabin (Figures 107 - 108) (NE 1/4, Section 5, T11S R13W) UTM: 12/758000E/3696440N Catron County, New Mexico

This lookout was constructed in 1934 and is located on the Black Range Ranger District. The 30 ft high Aermotor MC-24 with a 12 ft by 12 ft wood cabin was remodeled in 1978, when all of the original windows were replaced. This lookout replaced an earlier wooden tower built in the 1920s. The present cabin was built in 1925 and is little changed. The lookout tower has not retained its integrity of original design and construction and is not recommended for National Register eligibility. However, the log cabin is over 50 years of age, has retained its integrity of original design, construction, workmanship and materials and is recommended for National Register eligibility. A metal shed and privy are recent additions to the complex and are not eligible for the National Register. The boundary of the Black Mountain

lookout cabin is a square which measures 40 ft by 40 ft with the cabin at the center. The area surrounding the cabin within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Hillsboro Peak Lookout Tower and Cabin (Figures 109 - 111) (NW 1/4, Section 4, T16S R9W) UTM: 13/240260E/3649260N Sierra County, New Mexico

Located on the Black Range Ranger District, this 45 ft high Aermotor MC-40 steel tower has a 7 ft by 7 ft steel cab and was erected in 1933. This lookout replaced a wooden tower built in the early 1920s. The log cabin associated with this lookout was built in 1925. The modern metal building was built in 1965. Because the lookout tower and cabin have both retained their integrity of original design, construction, workmanship, materials, location, setting and association and are over 50 years of age, they are both recommended for National Register eligibility. A wood privy, built in 1940, but with a metal shed addition, and a modern fiberglass privy are not eligible for the National Register. The boundary of the Hillsboro Peak lookout tower and cabin is a rectangle which measures 130 ft NW-SE by 80 ft SW-NE with the tower in the north corner. The metal building and the fiberglass privy are noncontributing elements within the boundary. The wood privy and metal shed are located outside the boundary.

El Caso Lookout Complex (Figures 112 - 115) (SE 1/4, Section 27, T2S R16W) UTM: 12/731110E/3776220N Catron County, New Mexico

This Aermotor MC-24 lookout tower is located on the Quemado Ranger District and was built in 1934. The tower is 30 ft high and has a 12 ft by 12ft wooden cab. The associated cabin and privy were also built in 1934. This lookout tower is unchanged from its initial construction. It represents one of the best examples of an Aermotor MC-24 tower and cab in the Southwestern Region. Because the lookout tower, cabin and privy retain excellent integrity of original design. construction, workmanship, materials, location, setting and association and are over 50 years of age, both are recommended for National Register eligibility. The boundary of the El Caso lookout complex is a square which measures 180 ft by 180 ft with the tower near the center of the northline (E-W) boundary. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Kaibab National Forest

The Kaibab National Forest encompasses 1.6 million acres in north-central Arizona and contains large commercial timber stands and extensive grazing lands. The Kaibab National Forest has a complex administrative history. The Grand Canyon Forest Reserve was created by President Cleveland on Feburary 20, 1893. In 1908, all of the San Francisco Mountains and parts of the Black Mesa, Tonto and Grand Canyon Forest Reserves were consolidated under the name of Coconino National Forest. In 1910, part of the Coconino National Forest became the Tusayan National Forest. Also in 1908, the Dixie National Forest and the Kaibab National Forest were created, In 1924, the Dixie National Forest was consolidated with the Kaibab National Forest and in 1934, portions of the Kaibab National Forest north of the Grand Canyon and the Tusayan National Forest south of the Grand Canyon were combined to form today's Kaibab National Forest.

Jacob Lake Lookout Tower (Figure 116) (NW 1/4, Section 17, T38N R1E)
UTM: 12/391650E/4062050N Coconino County, Arizona

This 100 ft high Aermotor MC-39 steel tower with a 7 ft by 7 ft steel cab was erected in 1934 by contractors from Kanab, Utah, and is located on the North Kaibab Ranger District. The tower has received only routine maintenance and shows no major structural changes. The lookout's cabin is not at the site, but is located one mile away at an old administrative site, the Jacob Lake ranger station which is listed on the National Register. Because this lookout has retained its integrity of original design, construction, workmanship, materials, setting, location and association and is over 50 years of age, it is recommended for National Register eligibility. The boundary of the Jacob Lake lookout tower is a square which measures 40 ft by 40 ft with the tower located at the center. The area surrounding the tower within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Big Springs Lookout Tower (Figure 117) (NW 1/4, Section 19, T37N R1E)
UTM: 12/380650E/4050400N Coconino County, Arizona

Erected for the Forest Service in 1934 by contractors from Kanab, Utah, this 100 ft high steel tower with a 7 ft by 7 ft steel cab is located on the North Kaibab Ranger District. This lookout is an

Aermotor MC-39 type. The associated 18 ft by 24 ft wood frame cabin was built in 1959 replacing an earlier log cabin and is not being nominated. Study of historic photographs indicates few structural changes have occurred since the lookout was built. Because the lookout tower is over 50 years of age and has retained its integrity of original design, construction, workmanship, materials, setting, location and association, it is recommended for National Register eligibility. The boundary of the Big Springs lookout tower is a square which measures 40 ft by 40 ft with the tower located at the center. The area surrounding the tower within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Dry Park Lookout Cabin and Storage Sheds (Figures 118 - 122) (NE 1/4, Section 12, T35N R1E) UTM: 12/389100E/4034650N Coconino County, Arizona

The Dry Park lookout, located on the North Kaibab Ranger District, was built in 1944 after two years of delays due to problems with the War Production Board. The 120 ft high steel tower with a 7 ft by 7 ft steel cab is an Aermotor MC-99 type and is the tallest tower on the Kaibab National Forest. Window pane design is slightly different on this MC-99 model than on earlier Aermotor models. The lookout tower has experienced no major structural modifications since it was built. It replaced an earlier wood tower built in the 1930s. The Aermotor MC-99 type is unusual for the Southwestern Region. This lookout is one of only two extant samples of the style, the other being on the Lincoln National Forest. The cabin at this site is 22 ft by 25 ft with four rooms and was built in 1936. It has a simple gable roof covered with corrugated tin. It is a "builder bungalow" style with red-painted wood siding and white trim. It has an extended eave over the doorway supported by brackets with diamond cut purlins. Rafters under the eaves are exposed. The windows are all six-over-six light wooden sash. There are two storage buildings at this site. Storage building Number 1 is a 12 ft by 14 ft board-and-batten structure with a shingled gable roof, while storage building Number 2 is a 7 ft by 9 ft board and batten structure with a shingled gable roof. The two storage sheds were built in 1936. The lookout tower at this site, which is less than 50 years of age and falls outside the 1942 cutoff date for this study, is not being nominated. The support buildings at this site retain their integrity of original design, construction, workmanship, materials, setting, location and association and are recommended for National Register eligibility. The boundary of the Dry

Park lookout associated structures is a rectangle which measures 200 ft N-S by 150 ft E-W with storage building Number 2 situated in the southwest corner of the property. The lookout tower is a noncontributing property within the boundary. The area surrounding the complex within the boundary is not considered a "buffer area", but is integral to the setting of the property (see attached map).

Kendrick Lookout Cabin (Figures 123 - 126) (NE 1/4, Section 3, T23N R5E) UTM: 12 423180E/3918450N
Coconino County, Arizona

Located on the Chalender Ranger District, the Kendrick lookout tower was erected in July of 1964, replacing an L-4 lookout house built in the 1930s. The tower is a USDA Forest Service Standard Plan CL-100 to CL-106 series type erected by Asa G. Edkel of Prescott, Arizona. The steel tower is 10 ft high and the steel cab measures 14 ft by 14 ft, another example of an R-6 flat design. The steel cab was provided by the Shuler Engineering Company of Newark, Ohio. This tower is located in a wilderness area. This mountain top was used as a fire lookout site as early as 1910-1911. The cabin, located approximately 1500 ft from the lookout, was built in 1911 by fire lookout guard, Bill Williams, who lived in the cabin and hiked up to the top of the mountain during the day to watch for smoke. The cabin was used until the early 1930s. The cabin is still standing and is in excellent condition. It is used today as a hiker shelter. The cabin measures 9 ft by 12 ft, has a simple, corrugated tin gable roof with deeply overhanging eaves, a round debarked ridge pole and purlins. The logs in the walls are joined with square notches at the corners. The mortar between the joints is concrete. The foundation consists of basalt blocks with concrete mortar. The cabin has a wood plank floor, one wood plank door on the south end and windows on the east and west sides. This cabin is the second oldest example of a fire detection structure present in the Southwestern Region. The Forest Service has placed an interpretive sign at this cabin site. Because the cabin is over 50 years of age and retains its integrity of original design, construction, workmanship, materials, location and setting, it is recommended for National Register eligibility. The lookout tower is not recommended for National Register eligibility as it is less than 50 years old and does not represent an exceptional type. The boundary of the Kendrick lookout cabin is a square which measures 40 ft by 40 ft with the cabin at the center. The area surrounding the cabin within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Volunteer Lookout Cabin (Figures 127 - 130) (NW 1/4, Section 8, T21N R5E) UTM: 12/418560E/3897380N Coconino County, Arizona

This lookout tower is also located on the Chalender Ranger District and was erected in 1963. This steel lookout tower is 30 ft high and has a 14 ft by 14 ft steel cab. It is a USDA Forest Service Standard Plan CL-100 to CL-106 series type. It was built by the Forest Service and the Navajo Army Depot and is still jointly operated by them. It replaced an earlier 16 ft hioh wood tower with a 7 ft bu 7 ft cab built in 1932. The associated wood frame cabin was built in 1939. It has a gable roof and is constructed on the same plan as the Grandview Lookout cabin with some differences in structural detailing such as wider weather board siding. The cabin has a simple gable roof with asphalt shingle, exposed rafters and brown-painted wooden siding. It has wood sash windows. The cabin sits on a poured concrete foundation. The interior has two rooms, a kitchen and a bedroom. It was built on Forest Service Plan B-16. Because the cabin at this site meets the age requirements for this study and has retained its integrity of original design, construction, materials, workmanship, setting and location, it is recommended for National Register eligibility. The lookout tower is less than 50 years old, does not represent an exceptional type or style and is not recommended for National Register eligibility. A recent storage shed south of the tower also is not eligible. The boundary of the Volunteer lookout cabin is a square which measures 40 ft by 40 ft with the cabin at the center. The area surrounding the cabin within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Grandview Lookout Tower and Cabin (Figures 131 - 134) (NW 1/4, Section 27, T30N R4E) UTM: 12/413950E/3979475N Coconino County, Arizona

This lookout is located on the Tusayan Ranger District and was built in 1936. The steel lookout tower is 80 ft tall and has a 7 ft by 7 ft steel cab. It is an Aermotor MC-39. This tower replaced an earlier log tower with platform built in the 1920s. The wood frame cabin was also built in 1936 and is from Forest Service Plan B-16. The cabin measures 12 ft by 22 ft and has two rooms. It has a shingled gable roof with overhanging eaves and exposed rafters. The eaves above the front door is extended and supported by knee brackets with a diamond cut purlins. The cabin has weather-board siding and a poured concrete foundation. Because the lookout tower and cabin are both over 50 years

old and have retained their integrity of original design, construction, workmanship, materials, setting, location and association, both are recommended for National Register eligibility. Two privies at the complex are more recent in age and are not eligible for the National Register. The boundary of the Grandview lookout complex is a rectangle which measures 210 ft N-S by 80 ft E-W with the tower situated approximately 30 ft north of the center of the south (E-W) boundary line. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Lincoln National Forest

This National Forest is located in New Mexico and covers over one million acres. It has important water, wildlife, wood, grazing forage and recreation resources. Five rivers, the Ruidoso, Felix, Penasco, Hondo and Bonito, flow from the east side of the mountains. They are all tributaries of the Pecos River and supply a major portion of the water for southeastern New Mexico and west Texas. The 31,000 acre White Mountain wilderness is located within the Lincoln National Forest.

In 1950, a passing motorist's carelessly discarded a match or cigarette starting the Capitan Fire which burned 17,000 acres before being brought under control. A crew of fire fighters found a badly burned bear cub that they rescued. This cub was to become known as Smokey the Bear and became a major symbol of the Forest Service fire safety and prevention program.

The Lincoln Forest Reserve was created in 1902. The Galinas Forest Reserve was created in 1906, the Guadalupe National Forest in 1907 and the Sacramento National Forest in 1907. In 1908, the Guadalupe and Sacramento National Forests were consolidated into the Alamo National Forest and the Gallinas and Lincoln National Forests were consolidated into the Lincoln National Forest. On June 6, 1917, the Alamo National Forest was transferred to the Lincoln National Forest.

Monjeau Lookout (Figures 135 - 137) (Section 24, T10S R12E) UTM: 13/432020E/3699100N Lincoln County, New Mexico

This lookout, located on the Smokey Bear Ranger District, was built by a CCC crew in 1940 and represents one of the most unique lookouts in

the Southwestern Region. The Monjeau lookout has a 7 ft by 7 ft metal cab manufactured by International Derrick on a 14 ft by 14 ft native stone tower. The cab is for observation only. The living quarters are located below in the stone tower.

This lookout is illustrated in the Forest Service Standard Lookout Planbook originally published in 1938. The cab and tower plan (No. B6601) was provided by the International Derrick Company. The Monjeau lookout replaced an earlier D-6 cupola type lookout house built in the early 1930s. The Monjeau lookout is located at an elevation of 9,641 ft and is a popular visiting spot for tourists. This tower represents an excellent example of the "rustic style" construction type utilized by the CCC for the National Park Service and Forest Service buildings. It is the only example of a lookout in the Southwestern Region that utilized the "rustic style." Because this lookout represents one of the most unusual architectural types in the Southwestern Region and has retained its integrity of original design, construction, setting, location, workmanship and materials, it is recommended for National Register eligibility. Because the lookout retains integrity of its architectural style, the replacement of windows at the Monjeau lookout is not regarded as significant enough to disqualify the lookout for National Register eligibility. The boundary of the Monjeau lookout tower is a square which measures 40 ft by 40 ft with the tower at the center. The area surrounding the tower within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Wofford Lookout Complex (Figures 138 - 142) (SE 1/4, Section 19, T15S R13E) UTM: 13/433640E/3650940N Otero County, New Mexico

Located on the Cloudcroft Ranger District, this 80 ft steel Aermotor MC-39 tower with a 7 ft by 7 ft steel cab was erected in 1933 by the CCC. The wood frame cabin was built in 1933 and the storage buildings in 1937. The cabin measures approximately 16 ft by 12 ft, has a simple gable roof and narrow wood slats for siding. The roof has wood shingles. The interior walls are plasterboard and the floors are hardwood The storage shed has a simple gable wood shingled roof and measures approximately 7 ft by 10 ft. Both buildings sit on cement foundations. Because the Wofford lookout and associated buildings are over 50 years of age and have retained their integrity of original design, construction, location, setting, workmanship and materials,

they are recommended for National Register eligibility. The boundary of the Wofford lookout complex is a square which measures 80 ft by 80 ft with the southeast corner of the tower fence situated in the southeast corner of the property. This excludes a radio storage shed which was a later addition to the complex and is not eligible. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Ruidoso Lookout Tower (Figure 143) (NE 1/4, Section 31, T11S R13E) UTM: 13/438400E/3688070N Lincoln County, New Mexico

This lookout, a 30 ft high steel tower with a 14 ft by 14 ft wood cab, represents an Aermotor MI-25 type and was erected in 1940. It is located on the Smokey Bear Ranger District. The Aermotor MI-25 type is an unusual and rare type of lookout in the Southwestern Region. Only one other MI-25 is known, that being located on the Gila National Forest. The Ruidoso lookout does not appear to have experienced any major modifications since it was constructed. Because this lookout falls within the 1942 cutoff for this study and it retains its integrity of original design, construction, workmanship and materials, it is recommended for National Register eligibility. The boundary of the Ruidoso lookout tower is a square which measures 40 ft by 40 ft with the tower at the center. The area surrounding the tower within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Bluewater Lookout Complex (Figures 144 - 147) (SW 1/4, Section 9, T18S R14E) UTM: 13/456440E/3622500N Otero County, New Mexico

Located on the Mayhill Ranger District, this 45 ft high steel tower with a 7 ft by 7 ft steel cab represents an Aermotor LX-24 type or an International Derrick Company tower. The Forest Service records are not clear on this point. Research efforts have not been able to clarify this. It appears that while the International Derrick Company did manufacture steel towers, they did not differ much from the more common Aermotor towers. Other Forest Service records cited by Irwin (1986) state that this lookout tower was built in 1917 for the United States Weather Bureau and sold to the Forest Service who erected it at this site in 1937. Study of historic photographs suggests that no major structural modifications have occurred. Although moved from its original location, this lookout has been in place at its present

location and used as a fire detection facility for 50 years. The wood frame cabin and storage shed were built at this site in 1937. They have experienced little modification outside of normal maintenance over the years. The entire lookout complex, including the tower, cabin and storage shed, retains its integrity of original design, construction, workmanship, materials, setting, location and association and is recommended for National Register eligibility. The boundary of the Bluewater lookout complex is a square which measures 80 ft by 80 ft with the southwest corner of the storage building situated in the southwest corner of the property. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Weed Lookout Tower (Figures 148 - 149) (NE 1/4, Section 25, T17S R13E) UTM: 13/447640E/3629770N Otero County, New Mexico

This Aermotor LX-24 lookout, located on the Mayhill Ranger District, was erected in 1926. It is the oldest surviving lookout on the Lincoln National Forest. The steel tower is 48 ft high and has a 7 ft by 7 ft steel cab. A wood frame storage building was removed in 1978. Historic photographs indicate no major structural changes have occurred. The wooden steps were replaced by metal ones in 1966 and a microwave dish was added for communication purposes in 1985. Otherwise, the lookout retains much of its integrity of original design, construction, location, setting, materials, workmanship and association and is recommended for National Register eligibility. The boundary of the the Weed lookout tower is a square which measures 50 ft by 50 ft with the tower at the center. The small metal radio shed is of recent construction and is a noncontributing property. The area surrounding the tower within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Carrisa Lookout Complex (Figures 150 - 154) (NW 1/4, Section 9, T19S R13E) UTM: 13/441960E/3615360N Otero County, New Mexico

This Aermotor MC-39 lookout tower was erected in 1934-1935 and is located on the Mayhill Ranger District. It is an 80 ft high steel tower with a 7 ft by 7 ft steel cab. This lookout replaced earlier ones at this location. The wood frame cabin with a simple gable roof was built in 1935 and the storage shed in 1937. Neither of these

structures show any modification from earlier photographs. The lookout tower has experienced no major structural changes. Because the lookout tower and support buildings all meet the age requirements and have retained integrity of original design, construction, setting, location, workmanship, materials and association, the entire Carissa lookout complex is recommended for National Register eligibility. A fiberglass privy is recent and is not eligible. The boundary of the Carrisa lookout complex is a rectangle which measures 70 ft N-S by 100 ft E-W with the south corner of the cabin situated 10 ft north of the center of the south (E-W) boundary. The area surrounding the complex within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Prescott National Forest

The Prescott National Forest encompasses over one million acres of land in north-central Arizona. This National Forest has important timber, forage, recreation and historic resources. This National Forest surrounds the town of Prescott which was the first territorial capital of Arizona. For many years, the mining industry was important to the economy of the area, and the forests supplied wood for this industry. The Prescott Forest Reserve was created on May 10, 1898. The Verde Forest Reserve was created on December 30, 1907. On July 2, 1908, the Prescott and Verde National Forests were consolidated under the name of Prescott National Forest. On October 22, 1934, 249,201 acres of the Tusayan National Forest were transferred to the Prescott National Forest.

Mount Union Lookout Cabin (Figures 155 - 157) (NE 1/4, Section 6, T12N R1W) UTM: 12/371860E/3809800N Yavapai County, Arizona

This 30 ft high steel tower with 12 ft by 12 ft wood cab is an Aermotor MC-24 and was erected in 1933 by CCC crews. It is located on the Bradshaw Ranger District. The lookout tower has experienced extensive modification including window replacement in 1979, new roofing in 1982, new stairs in 1983, and new siding in 1982. The cabin has experienced no major structural changes. The lookout tower has lost its integrity of original design and construction and is not recommended for National Register eligibility. The cabin with a simple gable roof, a 6 ft overhanging porch, interior oak floors and

paneling and redwood siding has retained it integrity of original design and construction and is recommended for National Register eligibility. Three radio sheds and a privy are more recent additions to the complex and are not eligible. The boundary of the Mount Union lookout cabin is a square which measures 40 ft by 40 ft with the cabin at the center. The area surrounding the cabin within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Mingus Lookout Complex (Figures 158 - 161) (NW 1/4, Section 30, T15N R2W) UTM: 12/396765E/3839510N Yavapai County, Arizona

Located on the Verde Ranger District, this 59 ft steel x-brace tower with a 7 ft by 7 ft steel cab was erected in 1935. The lookout tower was designed by the Pacific Coast Steel Company. The wood frame cabin, a simple gable roofed structure with an overhanging front porch was also built in 1935. Study of historic photographs indicates that no major structural changes have occurred to either the lookout tower or the cabin. A wood frame shed is of the same vintage and probably dates to 1935. Because both structures are over 50 years old and retain their integrity of original design, construction, workmanship, materials, setting, location and association, both are recommended for National Register eligibility. A more recent wood privy is not eligible. The boundary of the Mingus lookout tower and cabin is a rectangle which measures 40 ft N-S by 180 ft E-W with the tower in the southeast corner. The area surrounding the tower and cabin within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Hyde Mountain Lookout House (Figures 162 - 164) (SE 1/4, Section 20, T17N R6W) UTM: 12/324490E/3856500N Yavapai County, Arizona

This 12 ft by 12 ft wood L-4 lookout house was built probably by a CCC crew in 1936 and is located on the Chino Valley Ranger District. The lookout is accessible only by a two mile trail. This L-4 type of lookout house is the only one of its style on the Prescott National Forest. Despite modification to the windows, the Hyde Mountain lookout retains much of its integrity of original design, construction, materials, workmanship, setting and location and is recommended for National Register eligibility. A storage shed located

northwest of the lookout house is of more recent construction and is not eligible. The boundary of the Hyde Mountain lookout tower is a square which measures 40 ft by 40 ft with the tower at the center. The area surrounding the tower within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Santa Fe National Forest

The Santa Fe National Forest encompasses over 1.5 million acres managed by the Forest Supervisor's office in Santa Fe, New Mexico. This National Forest contains abundant wildlife, timber and forage resources. It also includes the Pecos wilderness area. Tourism, the livestock industry and timber are important mainstays of the economy of north-central New Mexico and are closely tied to National Forest resources. The Santa Fe National Forest was created from the consolidation of the Jemez and Pecos National Forests. Previously, the Pecos Forest Reserve had been created by presidential order in 1892, the first in the Southwestern Region. The Jemez Forest Reserve had been created in 1905.

Glorieta Baldy Lookout Tower (Figures 165 - 166) (NW 1/4, Section 5, T16N R11E) UTM: 13/427650E/3945220N San Miguel County, New Mexico

This 30 ft high steel Aermotor MC-24 tower with a 12 ft by 12 ft wooden cab was constructed in 1940 and is located on the Pecos Ranger District. Review of historic photographs indicates that no major structural changes have been made since the tower was built. Because the Glorieta Baldy lookout represents one of the best examples of an Aermotor MC-24 tower and retains excellent integrity of original design, construction, materials, workmanship, location and setting, it is recommended for National Register eligibility. The boundary of the tower is a square which measures 40 ft by 40 ft with the tower at the center. The area surrounding the tower within the boundary is not considered a "buffer area," but is integral to the setting of the property (see attached map).

Tonto National Forest

The Tonto National Forest includes 2.9 million acres of forest and desert country extending from the Mogollon Rim to just northwest of Phoenix. This National Forest contains abundant water, timber, recreation, wildlife and forage resources. The Salt and Verde River watersheds provide water for the Phoenix area. The National Forest contains four wilderness areas: the Sierra Ancha, the Pine Mountain, the Mazatzal and the Superstition. The Tonto Forest Reserve was created on October 3, 1905. In 1934, 151,285 acres of the Bloody Basin area on the Prescott National Forest were transferred to the Tonto National Forest.

Diamond Point Lookout Cabin (Figure 167) (Section 23, T11N R11E)
UTM: 12/482320E/3793850N Gila County, Arizona

This 30 ft high steel Aermotor MC-24 tower with a 12 ft by 12 ft cab is located on the Payson Ranger District and was erected in the fall of 1936 by a CCC crew. The wood frame cabin was built in 1941. The lookout tower has been modified. Metal steps were added in 1984 and at an unknown date the original windows were replaced with sliding aluminum windows and the wooden shutters removed. The wood frame cabin with a simple gable roof and shiplap siding is little changed from when it was built. A garage barn built at the site in 1941 was destroyed in 1972. The lookout tower has lost its integrity of original design and construction and is not recommended for National Register eligibility. The wood frame cabin has retained its integrity of original design, construction, workmanship and materials and is recommended for National Register eligibility. A more recent privy of unknown date is not eligible. The boundary of the Diamond Point lookout cabin is a square which measures 40 ft by 40 ft with the cabin at the center. The area surrounding the cabin within the boundary is not considered a "buffer area", but is integral to the setting of the property (see attached map).

Summary

Table 1 presents a summary listing of lookouts and associated structures nominated to the National Register under this thematic nomination. Thirty-one lookouts were recommended for nomination to the National Register. The earliest one was built in 1923. The majority

date from the 1930s and are distinguished by the lack of any major structural modification. All of these retain their integrity of original design, construction, workmanship, materials, location, setting and feeling and association, as well as retaining site integrity. Fifty-three associated support structures, including cabins, storage sheds and privies, barns, corrals, cisterns and walls, were recommended for nomination to the National Register. The earliest surviving fire detection related structure in the Southwestern Region, a 1909 cabin at Canjilon lookout on the Carson National Forest in New Mexico, is within this group as well as a 1911 cabin at Kendrick lookout on the Kaibab National Forest. The recommended outbuildings exhibit no major structural changes and retain their integrity of original design, construction, workmanship, materials, location, setting and feeling and association.

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National Forest Fire Lookouts in the Southwestern Region, USDA Forest Service

TABLE 1

Nominated Fire Lookout Towers and Associated Structures
of the Southwestern Region

	Aermotor Tower Types								Other Tower Types				Associate Structure
	N	MC-39	LX-24	M1-25	MC-24	LL-25	MC-40	LS-40	CT-2	L-4/L-5 Houses	Pacific Coast Steel	Inter Derrick	
Forest													
Apache/Sit.	5	0	1	0	2	1	0	1	0	0	0	0	10
Carson	0	0	0	0	0	0	0	0	0	0	0	0	1
Cibola	0	0	0	0	0	0	0	0	0	0	0	0	0
Coconino	3	0	0	0	0	0	0	0	1	0	1	1	3
Coronado	7	0	0	0	0	0	3	0	0	4	0	0	13
Gila	4	0	0	0	1	0	2	0	0	0	0	0	10
Kaibab	3	3	0	0	0	0	0	0	0	0	0	0	6
Lincoln	6	2	2	1	0	0	0	0	0	0	0	1	6
Prescott	2	0	0	0	0	0	0	0	0	1	1	0	3
Santa Fe	1	0	0	0	1	0	0	0	0	0	0	0	0
Tonto	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	31	5	4	1	4	1	5	1	1	5	2	2	53

TABLE 2

SUMMARY OF FIRE LOOKOUTS CONTAINING NOMINATED PROPERTIES

(* = Noncontributing structure within property boundary)

Forest/Lookout		Structured Type	Date	Eligible
Apache/Sitgreaves NF				
PS Knoll (CCC)		Aermotor MC-40	1933	Yes
		cabin	1939	Yes
		storage shed	1939	Yes
		privy	1940	Yes
Bear Mountain (CCC)		Aermotor MC-24	1933	Yes
		cabin	1940	Yes
		storage shed	1928	Yes
		privy	1940	Yes
Lake Mountain		Aermotor LX-24	1926	Yes
		cabin	1926	Yes
	*	privy	Unknown	No
Deer Springs		Aermotor LL-25	1923	Yes
		cabin	1923	Yes
	*	privy	Unknown	No
Promontory Butte		Aermotor LS-40	1924	Yes
		cabin	1924	Yes
		storage shed	1924	Yes
Carson NF				
Canjilon		cabin	1909/1910	Yes
Coconino NF				
Moqui		CL-100/106	1952	No
		cabin	1932	Yes
Woody Mountain (CCC)		Pacific Coast Steel	1936	Yes
		cabin	1982	No
		shower, shed, privy	Unknown	No
Mormon Lake		Aermotor LX-24	1927	No
		cabin	1928	Yes
Buck Mountain (CCC)		CT-2/L-4	1939	Yes
		shed, privy	Unknown	No
Lee Butte		Internat'l Derrick	1933	Yes
		cabin	1933	Yes
		showerhouse, trailer	Unknown	No

Coronado NF

Atascosa	L-4 house	1930-1933	Yes
	privy	1933	Yes
	cistern	1933	Yes
Barfoot (CCC)	L-4 house	1935	Yes
	shed	1935	Yes
	privy	1935	Yes
	cistern	1935	Yes
	retaining wall	1935	Yes
Lemmon Rock	L-4 house	1928	Yes
*	privy	Unknown	No
Webb Peak (CCC)	Aermotor MC-40	1933	Yes
	cabin	1960-1962	No
	privy	Unknown	No
West Peak (CCC)	Aermotor MC-40	1933	Yes
	cabin	1959	No
	privy	Unknown	No
Heliograph (CCC)	Aermotor MC-40	1933	Yes
	log cabin	1933	Yes
	wood frame barn	1933	Yes
	privy	1933	Yes
*	communications bldg.	Unknown	No
	TV powerhouse	Unknown	No
Monte Vista	CL-100/106	1966	No
	cabin (CCC)	1933	Yes
	metal storage shed, privy	Unknown	No
Silver Peak (CCC)	L-4 house	1938	Yes
	storage shed	1938	Yes
	privy	1938	Yes
	water cistern	1938	Yes

Gila NF

Mogollon Baldy	Aermotor MI-25	1948	No
	cabin	1923	Yes
	metal privy	Unknown	No
Mangas Mountain (CCC)	Aermotor MC-24	1934	Yes
	cabin	1934	Yes
*	metal privy	Unknown	No
Reeds Peak	Aermotor LX-24	1929	Yes
	cabin	1959	No
	privy, shed	Unknown	No

Bearwallow Mountain	*	Aermotor LX-24	1923	No
		cabin	1923	Yes
		cabin	1940	Yes
		privy	1940	Yes
		storage shed	1923-1940	Yes
Black Mountain		Aermotor MC-24	1934	No
		cabin	1925	Yes
		metal shed, privy	Unknown	No
Hillsboro		Aermotor MC-40	1933	Yes
		cabin	1925	Yes
	*	metal Butler building	Unknown	No
	*	fiberglass privy	Unknown	No
		wood privy/metal shed	1940 (privy)	No
El Caso (CCC)		Aermotor MC-24	1934	Yes
		cabin	1934	Yes
		privy	1934	Yes
Kaibab NF				
Jacob Lake		Aermotor MC-39	1934	Yes
Big Springs		Aermotor MC-39	1934	Yes
		cabin	1959	No
Dry Park	*	Aermotor MC-99	1944	No
		cabin	1936	Yes
		2 storage buildings	1936	Yes
Kendrick		CL-100/106	1964	No
		cabin	1911	Yes
Volunteer		CL-100/106	1963	No
		cabin (CCC)	1939	Yes
		storage shed	Unknown	No
Grandview		Aermotor MC-39	1936	Yes
		cabin (CCC)	1936	Yes
		2 privies	Unknown	No
Lincoln NF				
Monjeau (CCC)		Internat'l Derrick 7ft by 7 ft. cab on stone base	1940	Yes

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Wofford (CCC)	Aermotor MC-39	1933	Yes
	cabin	1933	Yes
	storage shed	1937	Yes
	radio shed	Unknown	No
Ruidoso (CCC)	Aermotor MI-25	1940	Yes
Bluewater (CCC)	Aermotor LX-24/ Internat'l Derrick	1937	Yes
	cabin	1937	Yes
	storage shed	1937	Yes
Weed	Aermotor LX-24	1926	Yes
*	radio shed	Unknown	No
Carrisa	Aermotor MC-39	1934/1935	Yes
	cabin	1935	Yes
	storage shed	1937	Yes
	fiberglass privy	Unknown	No
Prescott NF			
Mt. Union	Aermotor MC-24	1933	No
	cabin	1933	Yes
	3 radio sheds, privy	Unknown	No
Mingus (CCC)	Pacific Coast Steel	1935	Yes
	cabin	1935	Yes
	storage shed	1935 ?	Yes
	privy	Unknown	No
Hyde Mountain (CCC)	L-4 lookout house	1936	Yes
	storage shed	Unknown	No
Santa NF			
Glorieta Baldy	Aermotor MC-24	1940	Yes
Tonto NF			
Diamond Point (CCC)	Aermotor MC-24	1936	No
	cabin	1941	Yes
	privy	Unknown	No

TABLE 3

SUMMARY OF LOOKOUTS AND ASSOCIATED STRUCTURES BY FOREST

National Forests	No. of Lookouts	Lookout Towers, Houses--Not Eligible	Lookout Towers, Houses--Eligible	Associate Structure Eligible
Apache-Sitgreaves	16	11	5	10
Carson	3*	2	0*	1*
Cibola	7	7	0	0
Coconino	12	9	3	3
Coronado	10	3	7	13
Gila	13	9	4	10
Kaibab	10	7	3	6
Lincoln	9	3	6	6
Prescott	6	4	2	3
Santa Fe	8	7	1	0
Tonto	7	7	0	1
Totals	101	69	31	53

*One of the lookout sites on the Carson National Forest has only a cabin, no lookout.

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW				
_PREHISTORIC	_ARCHEOLOGY-PREHISTORIC	_COMMUNITY PLANNING	_LANDSCAPE ARCHITECTURE	_RELIGION	
_1400-1499	_ARCHEOLOGY-HISTORIC	X CONSERVATION	_LAW	_SCIENCE	
_1500-1599	_AGRICULTURE	_ECONOMICS	_LITERATURE	_SCULPTURE	
_1600-1699	X ARCHITECTURE	_EDUCATION	_MILITARY	_SOCIAL/HUMANITARIAN	
_1700-1799	_ART	_ENGINEERING	_MUSIC	_THEATER	
_1800-1899	_COMMERCE	_EXPLORATION/SETTLEMENT	_PHILOSOPHY	_TRANSPORTATION	
X 1900	_COMMUNICATIONS	_INDUSTRY	X POLITICS/GOVERNMENT	_OTHER (SPECIFY)	
		_INVENTION			

SPECIFIC DATES 1905-1942 BUILDER/ARCHITECT USDA Forest Service
Civilian Conservation Corps

STATEMENT OF SIGNIFICANCE

Summary

The significance of the USFS historic fire detection facilities as a thematic group lies in their direct association (Criterion a - 36CFR60.6(a)) with (1) the history of the development of the Forest Service as it relates to fire protection and detection, specifically in this case, the Southwestern Region, from 1905 to 1942; (2) the political and legislative events of Roosevelt's New Deal policies, in particular, the development, implementation and coordination of the Civilian Conservation Corps (CCC) directly in US Forest Service projects from 1933 to 1942; and (3) to a somewhat lesser degree, the conservation movement and its influence on public land management from 1905 to 1942. Additionally, the USFS historic fire detection facilities, as a thematic group under Criterion c - 36CFR60.6(c), are significant in that they embody the evolution of a distinctive architectural style from 1905 to 1942 which in time became characterized by standardized plans as a result of the specific functional requirements: (a) fire detection and (b) provisions for the reasonable comfort and housing of those required to staff the often isolated facilities. All of the structures included in this thematic nomination have retained sufficient integrity of location, design, construction, setting, materials, workmanship and feeling and association to preserve their historic identities and their direct association with

1) the development of the Southwestern Region of the USFS with regards to fire detection and protection (1905 to 1942),
2) the utilization of the CCC during the depression era (1933 to 1942),
3) the influence of the conservation movement in terms of public land management (1905 to 1942) and
4) the development of a functionally specific architectural style (1905 to 1942).

The period of significance for this thematic group is from 1905 to 1942. The earlier date marks the formal establishment of the USFS in the Department of Agriculture with Gifford Pinchot as the first chief.

The later date marks the termination of the CCC (organized in 1933) which played such an important role in the physical construction of so many lookouts in the Southwestern Region.

The significance of the lookouts in this nomination is at the state level for Arizona and New Mexico. It reflects national trends manifested at the state level and to a lesser degree at the local level.

The USFS fire lookouts and their support structures represent a thematic group related by historic context, architectural style and function. They reflect solutions to the problem of protective management of our National Forests as developed by the USFS from efforts initiated by the conservation movement. This group has an additional significance because of its strong and direct association with the Great Depression and efforts of the federal government to provide economic relief through programs such as the CCC. The fire lookouts also represent a variety of architectural styles that evolved through time and culminated in the development of standardized plans for lookouts in the 1930s. These historical associations are common in varying degrees for all the properties in the thematic group.

It is hoped that the results of this study can be used as a basis for the development of a management plan to protect and preserve these fire lookouts and their outbuildings. Most of the earliest lookout towers built prior to 1930 are gone and the remaining group represents an important nonrenewable historic resource that should be protected as an important example of the history and contributions of the Forest Service.

The historic context of these topics is discussed in detail in the following material.

Context 1: The Forest Service and Fire Detection in the Southwestern Region (1905 to 1942)

In 1891 the United States Congress passed the General Provision Act which enabled the President to designate and set aside certain specified areas of forested public lands as reserves. The first reserve created under this act was the Yellowstone Reserve in Wyoming. In the Southwest, the Pecos River Forest Reserve was established in 1892, followed by others including:

1893	Grand Canyon Forest Reserve
1898	Black Mesa Forest Reserve
	Prescott Forest Reserve
	San Francisco Mountain Forest Reserve
1902	Santa Rita Forest Reserve
	Santa Catalina Forest Reserve
	Chiricahua Forest Reserve
	Lincoln Forest Reserve
1905	Tonto Forest Reserve
	Jemez Forest Reserve
	Portales Forest Reserve
1906	Galinas Forest Reserve
	Manzano Forest Reserve
	Magdalena Forest Reserve
	San Mateo Forest Reserve
	Mount Taylor Forest Reserve
	Baboquivari Forest Reserve
	Huachuca Forest Reserve
1906	Tumacacori Forest Reserve
	Peloncillo Forest Reserve
	Taos Forest Reserve
1907	Big Burros Forest Reserve
	Verde Forest Reserve

In February 1905, the Secretary of Agriculture, James Wilson, issued a directive that announced the transfer of the Forest Reserves, then under the supervision of the Government Land Office in the Department of the Interior, to the Department of Agriculture, Division R, soon to be renamed the United States Forest Service (USFS). This was to have a profound effect on the people of Arizona and New Mexico. It concluded a series of events begun under Franklin Hough in 1873, continued by Bernhard Fernow in the 1880s and 1890s, and ended by the efforts of Gifford Pinchot and President Theodore Roosevelt after the turn of the century to preserve and protect the forest lands of the United States. The growth of the American Conservation Movement was to continue and often take different paths from the policies of the Forest Service, but the Transfer Act in 1905 represented an important milestone in the development of the USFS, specifically the Southwestern Region.

Because of the Transfer Act, twenty million acres of public lands in Arizona and New Mexico were to be administered by a district office of the United States Forest Service, headed in Washington, D.C. by one of the leaders of the American Conservation Movement and one of America's most able civil administrators, Gifford Pinchot. The policies of the Forest Service had a firm base in professional forestry which had been established during the previous twenty years by America's first professional forester, Bernhard Fernow. Now, Gifford Pinchot and his small group of student assistants, men such as Henry Graves, William Greeley and Ferdinand Silcox, were to refine and elaborate on a comprehensive system of management for the nation's forest resources with one of their major concerns being the control of wildfire on USFS lands.

In 1908, Chief Forester Gifford Pinchot appointed Arthur Ringland the first District Forester for the Southwestern District (later to be renamed Southwestern Region). The Forest Service was mandated to preserve the forest lands while allowing for their economic and recreational use. The Organic Administration Act of 1897 reflected the dual concern of Congress for not only the protection of federallly administered forests but also the agricultural, timber, mining and livestock interests that were economically dependent on the resources of forest lands.

Although range management has been a major focus of the Forest Service in the Southwestern Region, forest fire control and prevention also have been critical concerns. The earliest foresters in the Southwest believed fire to be the preeminent threat to the forest resources (Tucker & Fitzpatrick 1972:49-59). In the initial inventories of the newly created forests, evidence of past forest fire damage was clearly evident. In the late seventeenth century, a fire in the San Francisco Mountains area burned over 18,000 acres (Leiberg, Rixon and Dodwell 1904:26-27). In the 1880s, forest fires near Santa Fe burned for weeks (Tucker and Fitzpatrick 1972:49). Lang and Stewart (1909:17-19) reported extensive fire damage on the Kaibab Forest Reserve, stating:

> vast denuded areas, charred stubs and fallen trunks and the general prevalence of blackened poles seems to indicate their frequency and severity long before this country was explored by white men.

During his inventory of the Grand Canyon Division of the Tusayan National Forest, Allison (1910:14-15) reported little evidence of fire damage, but in the Carson National Forest Loveridge (1921:11) noted extensive damage in the Douglas fir stands.

In 1922, the management plan for the Mount Graham Division of the Crook National Forest in Arizona noted that ground fires and grazing were highly destructive of seedlings and prevented regeneration. The Forest Service recognized early on that recently logged areas were high hazard zones for fire (Baker et al., 1986:183-184).

Leopold (1923) in a report on the forest conditions on the Santa Fe National Forest felt that the damage from grazing was more extensive than that from fire. He believed that damage from grazing since white settlement far exceeded any evidence of prehistoric fire episodes. Both grazing and fire contributed to the deterioration of the forests in the Southwest.

Before the forests of the Southwest came under the administration of the Forest Service in 1905, there was no systematic approach to fire control. Fire control consisted largely of patrols by rangers on horseback. In 1903, Tom Stewart started work as a ranger on the Pecos Forest Reserve. On his first patrol he rode to the top of the mountains and observed two smokes from fires (Tucker and Fitzpatrick 1972:49). During these patrols on the forests of the Southwest, rangers were to locate many mountain top sites for observation that would later be utilized for fire lookout structures.

The instructions given new rangers included patrolling the district and watching for smokes. The first Forest Service Use Book stated:

> Officers of the Forest Service, especially Forest Rangers, have no duty more important than protecting the Reserves from forest fires.

In 1908 the initial systematic fire control program for the Southwest Region was prepared by Arthur Ringland, the first District Forester (Tucker and Fitzpatrick 1972:59-61). He suggested that a study of forest conditions and the development of a fire plan were necessary on all forests. He specifically recommended telephone lines to connect the lookouts to the ranger stations.

It appears that Ringland's suggestions were followed on several forests. On the Santa Catalina Forest, Stanley Wilson constructed a log fire lookout on Mount Bigelow in 1909. On the Datil National

Forest, Supervisor W.F. Goddard asked his forester to develop a fire plan for the districts (Baker et al. 1986:189).

Many events and developments outside of the Southwestern Region were to have a profound influence on fire management in the Southwest Region. The disastrous fires of 1910 in the Northwest shocked the nation and were in a large part responsible for the passage of the Weeks Act in 1911 that provided increased funding for fire control, state cooperative fire protection programs and research activities. New Mexico would join the state cooperative program in 1928, while Arizona, would be the last state to join, in 1974 (USDA Annual Reports, 1928 and 1974). In 1926, Congress passed the Clarke-McNary Act which supplanted the Weeks Act and greatly expanded federal assistance to the states for fire control programs. During the early years of these acts, a large portion of the financial assistance to the states was used to pay the wages of seasonal fire guards and lookout observers. These two acts would provide the basis of federal financial support for the next fifty years.

The use of fixed lookout points originated around the turn of the century and quickly expanded. The earliest form of lookout was simply a flat mapboard mounted to a post on top of a mountain with good visibility. From this point the early fire guard would spot a fire and then chase it down. Another early form of lookout was a platform mounted in a tree with slats or spikes nailed to the side of the tree to permit climbing. These early lookouts were used primarily by fire guards on patrol as observation points on their designated routes. Over time they were changed to permanent stations with telephone links to the ranger station. Most of the early lookouts were built with locally available materials, usually logs. The steel tower, the treated timber tower, and the concrete block tower came later along with development of standardized plans for the towers.

Zimmermann (1969:5-6) reported that the Forest Service and State Forestry Departments had constructed a total of 5,060 lookout towers by 1953. He noted a steady decrease since that time. His 1967 count indicated that of the towers recorded in 1953 thirty percent were gone. This was partially due to the increased reliance by the Forest Service on aerial patrols for detection. In the Southwestern Region the pattern seems to vary with the national trend, and the construction dates of the lookouts in this study reflect this pattern:

Year	Number of Towers Constructed
1909	2
1917	1
1920s	12
1930s	47
1940s	4
1950s	17
1960s	14
1970s	1
1980s	2

It should be noted, however, that lookouts constructed during the 1950s and 1960s were largely replacements for those built in the 1930s by the CCC.

During his first years as Chief Forester, Pinchot authorized a series of studies on the history of forest fires in order to better understand the dangers of wildfire. He also authorized field investigations of fire control. These studies were to develop into the highly sophisticated analyses of fuel, combustion and weather (Steen 1976:135-136). Region 5 (California) was to provide the early leadership in conducting many of these studies.

From 1911-1914, Coert duBois had been conducting research on the problems of fire control in Region 5 (California). His comprehensive study was the first to address fire control in a systematic and scientific manner (duBois 1914) and was to serve as a model for fire control programs in the rest of the National Forests (Thornton 1986:15). In the fire detection section of the report he presented a standardized plan for a 12 feet by 12 feet, wood live-in lookout cab. He also endorsed the Aermotor Company's steel observation towers for use on the National Forests.

In 1911-1912, Chief Forester Henry Graves authorized S.B. Show to start his fire studies in Region 5. Show began his study of the Red River Lumber Company near Westwood, California (Steen 1976:135). Detection became a major interest and culminated in two major studies (Show et al. 1937a,b) that refined detection plans and were influential in the design of lookout systems in all parts of the country.

Much of the detection research focused on visibility and mapping of areas around existing or proposed lookout facilities. Sensitivity maps were made to correlate with fire occurrence zone maps to assist in determinating of the effectiveness of given lookout points.

In the early 1930s, Show formed a research group at the California Forest and Range Experiment Station (now the Pacific Southwest Forest and Range Experiment Station) that studied every aspect of fire including detection. The research group studied and published their findings on a variety of topics including lookout structure design, visibility patterns, lookout site designations (primary, secondary), and psychological factors affecting lookout observers. Show (1937a,b) consistently recommended the construction of additional lookouts to insure complete coverage. More often than not, however, individual forest budgets would not permit the development of the elaborate detection system which would have included additional the new lookouts that Show advocated.

Between 1919 and 1923, Aldo Leopold, Assistant District Forester, conducted an inspection tour of all the National Forests in Region 3. His reports (Leopold 1919-1923, 1924) noted that while most of the lookouts were in good condition, there was no systematic plan for their location. He also expressed doubt as to whether they were all needed. This may have been a reflection of his philosophy concerning the ecological nature of fire.

The most active period for lookout construction in the Southwest and the rest of the nation was the 1930s. The economic disaster of the Depression affected the Forest Service and lookout detection facilities in a surprisingly beneficial and significant way. Many of the recommendations of the California based research group were executed during this period. The creation of the CCC in 1933 provided the necessary manpower to carry out many of the construction plans recommended by Show's research group.

The report prepared by the Loveridge-Cliff Inspection Group (organized to evaluate fire control procedures across the nation) in 1945, noted the good record of fire control in the Southwest Region and devoted much of its discussion to grazing problems (Loveridge-Cliff Report 1945). However, the report did note the poor condition of many lookouts in the region and recommended improved maintenance or replacement. It appears that this was carried out in the 1950s and 1960s, when the Forest Service undertook the Increased Manning Experiment (Thornton 1986:20) and 31 new lookouts were constructed, often replacing earlier ones which were torn down. This was somewhat reminiscent of the 1930s when new CCC constructed lookout towers replaced many of the earlier wooden ones.

During the 1950s and 1960s, regional fire plans called for the quick suppression of all fires. Each forest in the Southwestern Region had its own particular problems. For instance, the Lincoln National Forest has over 150,000 acres of patented lands and many vacation homes that increase fire danger. The influx of larger numbers of people from Tucson into the Santa Rita Mountains of the Coronado National Forest for recreation caused several inspectors to advise establishing additional detection stations (Baker et al. 1986:202). The rugged terrain of the Santa Fe National Forest creates blind spots for fixed detection and thus more reliance on aerial patrols was required (Baker et al. 1986:202).

The 1967 Regional Management Plan marked a change in the region's fire policy (Baker et al. 1986:203). The existing philosophy of fire suppression was challenged in an article by Collins (1967). The emphasis on total suppression was changed to one of control. In recent years the Forest Service has focused on the development of alternate means of detection and more efficient means of fire suppression.

The decline in fire lookouts has been attributed to a number of factors (Thornton 1986: 20-21):

1) More fire reports coming in from the public than lookouts.

2) The effectiveness of aerial patrols.

3) Better transportation routes and equipment.

4) Radio repeaters and improved communication methods.

5) Smog rendering many low elevation sites useless.

6) Inflation in maintenance and operation costs.

7) Fixed point detection with automated devices: Automatic Lightning Detection System (ALDS), satellites and ground optics.

8) Changes in fire policies that permit monitoring and management of some wildfires.

9) Forest Service concern over liability risk which has resulted in the demolition of some unstaffed lookouts.

A final important factor not mentioned by Thornton is:

10) Wilderness designations. In a newly designated wilderness, some towers were perceived as nonconforming structures and were removed.

While some of these points are more specific to Region 5, a number of them do have relevance in explaining the decline in lookouts in the Southwestern Region.

Context 2: The Civilian Conservation Corps and the Forest Service in the Southwestern Region

The Great Depression was a severe crisis for America. It had a serious impact on the economic, social and political organization of the nation. Unemployment and dislocation of families were common and industry was disrupted. Over two million people were forced into a vagrant existence. Unemployment affected young workers with severity.

At the same time, the nation was becoming conscious of the serious problems of poor usage and exploitation of its national resources. Land use ethics (or more correctly, the lack of) had been largely governed by economic self-interest that resulted in eroded and exhausted soils, overgrazed grasslands and stripped forests. The loss of tree and grass cover threatened to accelerate erosion.

The CCC provided solutions to both these problems by employing young men in work focused on protecting national resources. The CCC involved the efforts of many governmental agencies and provided employment for thousands of young men. It was organized specifically to provide employment and deal with national conservation needs. In some circles, the CCC was labeled "Roosevelt's Tree Army." While forest planting was a major activity, CCC works included recreational development, soil conservation, aid to grazing and wildlife, flood control, reclamation, drainage, disaster and emergency relief and the protection and conservation of our national and state forests. The establishment of the CCC made available to federal, state and local governmental agencies for the first time an adequate supply of labor to carry out many of the conservation projects which had been planned but never executed due to a lack of labor and funds.

The CCC was established in April of 1933 and terminated in 1942. This agency accomplished its goals of removing people from the welfare lines and putting them back to work as well as achieving many conservation goals. While other federal agencies, such as the National Park Service and the Soil Conservation Service, utilized CCC crews, nearly half of the public works projects were administered by the Forest Service. The Forest Service controlled most of the camps allocated to the Department of Agriculture.

On the National Forests, the CCC helped to educate the public on preventing forest fires and provided a large labor pool for fire crews to locate and extinguish forest fires. Across the nation, the CCC built 3,470 fire towers and houses for the detection of forest fires, laid 65,000 miles of telephone lines to provide a communication system linking the lookouts to the ranger stations and constructed over 90,000 miles of trails and roads (Lacy 1976:140).

During the CCC period, the Southwestern Region contained 14 National Forests, including the Coronado, Coconino, Crook, Kaibab, Prescott, Sitgreaves, Tonto and Tusayan in Arizona and the Carson, Cibola, Gila, Lincoln and Santa Fe in New Mexico. The Apache National Forest had lands in both states.

Initial plans called for camps in Arizona and New Mexico with an enrollment of 8,650 men (Otis et al. 1986:29). Thirty-seven camps were opened. The Sitgreaves, Tonto, Carson and Lincoln National Forests had two camps each. The Crook, Prescott, Cibola and Gila National Forests had three camps each while the Coronado, Santa Fe and Apache National Forests had four camps each. The Coconino National Forest had five camps (Otis et al. 1986:29). An average of 20 camps continued operating in the Southwestern Region until the CCC was disbanded in 1942.

Administered as part of Army Corps Area 8, the enrollees went to Fort Bliss in El Paso, Texas, and later to Fort Huachuca, Arizona, for conditioning and training programs. Several organizational changes occurred during the early period and eventually five districts were established: Phoenix, Tucson, Albuquerque, Silver City and Fort Bliss. Nearly 12,000 men went through the camps of the Southwestern Region.

The location of camps was dictated by the need to have access to reliable water sources. The earliest camps were established at Treasure Peak on the Coronado National Forest and at Pinal Mountain on the Crook National Forest (now the Tonto). One of the first structures built by enrollees at the Pinal Mountain camp was a lookout tower on Signal Peak.

The Forest Service established many smaller side camps that allowed enrollees to be located closer to large projects. These smaller camps also were easier to supply with water. Work projects at the side camps included erosion control, rodent control, timber stand thinning, fencing of forest boundaries and range allotments, campground and recreation site construction and the building of trails, roads, bridges, telephone lines and fire lookouts. By the fall of 1933, fire lookouts had been constructed on Escudilla Peak on the Apache National Forest and Signal Peak and Webb Peak on the Crook (Tonto) National Forest. The exact number of lookouts and support structures built by the CCC in the Southwestern Region is not clear from the available records which are sketchy and incomplete. Of those sites that could be documented, at least 31 lookout towers and 25 outbuildings were constructed by the CCC. Twenty of which are included as part of the thematic nomination.

While CCC projects that involved range management, reforestation, water development and ranger stations often have received greater attention, important contributions were made by the CCC in improving the fire management capabilities of the Forest Service in the Southwestern Region through the construction of fire lookout facilities and related trails, roads and telephone lines. The Forest Service also became dependent on CCC labor for fire fighting crews.

The Forest Service fire lookouts and their support outbuildings represent a theme of the federal response to the Depression, as CCC accomplishments that enabled the Forest Service to develop a more systematic and effective fire detection capability. Another important association of these structures and the CCC is related to the benefits of the program provided to communities in Arizona and New Mexico through employment of local residents and financial relief to their families and communities.

Nearly half of the lookouts and many associated structures within this thematic group were built by the CCC. USFS research studies by Show and Kotok (1937a), du Bois (1914) and Show et al. (1937b) had urged the development of an extensive lookout system on National Forests to insure an adequate detection system. Lack of funding and manpower hampered the implementation of these recommendations. With the creation of the CCC in 1933 and until its termination in 1942, the USFS had available the necessary manpower to expand the lookout system. This is what occurred at the national level and in the Southwestern Region. The construction of lookouts in the Southwestern Region was one of several goals of the CCC during its years of operation. It permitted the USFS to develop a large and complex fire detection system through the construction of many new lookouts or the replacement of earlier ones.

Context 3: Public Land Management and the Conservation Movement (1905 to 1942)

Throughout the first century of United States history, the policy was established for the government to administer public lands in order to increase settlement, promote ownership of homes and develop resources for business and individual initiative.

The individuals and businesses that entered the frontier areas created conditions which required regulation. Resources of all sorts, particularly the forests, were ruthlessly exploited with no thought for future needs or generations. The sentiment was summed up aptly in the words of Senator Teller of Colorado in 1909 who said:

> I do not believe there is either a moral or any other claim upon me to postpone the use of what nature has given me, so that the next generation or generations yet unborn may have an opportunity to get what I myself ought to get (Teller 1909).

For the first 75 years of our national history, there was little effort on the part of the government to regulate entry or control exploitation of resources on public lands. Men could enter lands, clear them by any method they chose and acquire ownership by occupation. This system resulted in conflicting claims and stripping valuable resources such as lumber or mineral. Lack of accurate surveys and orderly methods of title acquisition discouraged many from settling in the frontier area.

To remedy these and other disadvantages in the prevailing system of free entry and to encourage more rapid western development, the Congress passed the Homestead Act which permitted citizens to enter on a quarter section of land (160 acres) after it had been surveyed for a cost of $1.25/acre.

Under this act, thousands of homesteads were filed in the western states. Due to misuse of entry laws, Arizona and other western states suffered considerable exploitation of their forests as a result of this act.

In 1877, it was evident that the provisions made in the Homestead Act of 1862 for 160 acre homesteads were not satisfactory or proper because arid, semi-desert lands require irrigation before becoming productive. On 3 March 1877, Congress passed the Desert Land Act which permitted 640 acre entries on desert lands with the provision that water systems would be developed to grow crops within three years. It was not the intention of this act to permit the filing of

claims on timbered lands and while there are records of infractions of this sort, the worst result was the segregation of valuable grazing lands with independent water supplies.

However, the abuses to forest and grasslands under the Homestead and Desert Land Acts were insignificant in comparison to those that occurred under the Timber and Stone Act passed by Congress in 1878. The act authorized citizens to fell and remove timber from the public domain for mining and domestic purposes. It also allowed the purchase of public lands for $2.50 per acre for timber and stone use. The motive was to prevent illegal cutting, a common practice at the time, and to provide for the needs of the settlers. The real result of the act was that there was no way by which timber could be secured for commercial purposes in an honest manner. The inevitable outcome was fraud by which large timber companies secured lands on a massive scale. The Commissioner of the General Land Office wrote in 1882:

> ...depredations upon the public timber by powerful corporations, wealthy mill owners and lumber companies are all being committed to an alarming extent.

The motives for passing the Timber and Stone Act were to give the settler in addition to his 160 acres of lands, lands to supply timber for his domestic use. Unfortunately, the abuses of its provisions were serious and frequent.

Lumber companies took advantage of timber and stone entries to acquire timberlands for their cutting operations. In Arizona, the Commissioner of the Land Office reported in 1901 that the Old Dominion Copper Mining and Smelting Company cut in excess of four million board feet of lumber in 1900 to 1901 from non-mineral lands. Abuses also occurred by the stockmen who managed to acquire, under the guise of this act, vast tracts of land for grazing. The act was finally ammended in 1891 but abuses continued which resulted in the concentration of timber ownership in the hands of speculators and large companies.

During the 1870s, the conservation movement came into being in response to timber depredations of public lands as scientists and other educated men began to question the unrestricted use of natural resources on public lands and expressed their concern for the preservation of future supplies. In 1864, George Perkins Marsh published his important book, Man and Nature, which warned of environmental abuses and discussed the ethics of land use. Shortly after, the Annual Reports of the Department of Agriculture and Interior made reference to Marsh.

At this same time, the states also began to develop concerns for the protection of their public lands. Although early efforts focused more on the protection of commerce and transportation, forest fires, forestation and trespass by timber companies began to receive rudimentary forms of regulation. For instance, in 1885 California created a forest board chartered to educate and conduct research but which had no powers to enforce regulation.

In the fall of 1875, the American Forestry Association was organized and held its first meeting in Chicago. The members agreed on the need for extensive research into the problems in timberlands. One of the delegates at this meeting who assume a leadership role was Dr. Franklin Hough of New York.

In 1873, Dr. Hough presented a paper at the annual meeting of the American Association for the Advancement of Science in Portland, Maine which summarized his own forest research in New York and argued for the need for management and preservation of the nation's timberlands. The American Association for the Advancement of Science endorsed his report and sent a memorandum to Congress urging that they organize and fund a study of the conditions of the nation's forests.

Several months later, Hough and Harvard botanist, George B. Emerson, traveled to Washington, D.C., where they met with Joseph Henry of the Smithsonian Institution and Commissioner of Agriculture, Frederick Watts. A meeting with President Ulysses S. Grant followed. Over the next three years, the idea of a forestry study moved back and forth in Congress. In 1876, Congress authorized funding and instructed the Department of Agriculture to create a position for a forestry agent to direct the study. Hough was chosen and within a year issued the first in a series of reports that were to analyze forest problems and emphasized the need for the development of a management policy to protect and preserve the forests. His reports had a strong influence on other government leaders. Secretary of the Interior, Carl Schurz worried about continued exploitation of timber resources on public lands.

In 1881, the Division of Forestry was established in the Department of Agriculture and Hough was named its first head. Political problems ensued and hough remained as head of the agency for less than two years. During that time, however, he managed to generate influential reports and he traveled to Europe to study professional forestry methods. His successor, Nathaniel Egleston, was ineffective. In 1886, he was succeeded by the first professional forester to be employed by the US government, Bernhard E. Fernow. Trained in Europe,

Fernow had held a German Forestry license since 1869 and after arriving in the US worked as a consultant in Pennsylvania. Shortly after taking office, Fernow received more power to implement policies when Congress gave full statutory recognition to the Forestry Division in the Department of Agriculture. Reports continued to pour into Washington from the western states documenting numerous cases of land fraud in securing timber lands. Fewnow drafted the first enforcement bill which Congress did not pass, but which proved to be a strong basis for later legislation.

Fernow strongly promoted the idea of establishing forest reserves and managing them through modern forestry techniques. He often spoke of the problems of forest fires and the need for more effective detection and suppression efforts.

Fernows' efforts in coordination with others in the Departments of the Interior and Agriculture resulted in the passage of the Forest Reserve Act in 1891 as an amendment to an act revising land laws. Seventeen forest reserves were created in three years by President Harrison and placed under the supervision of the Department of the Interior.

In 1897, a bill was passed by Congress that provided for the management of Forest Reserves. Fernow left office after political disputes in 1898 and went on to establish a forestry school at Cornell and became its first director. In 1907, he left to head the forestry school at the University of Toronto and continued to influence American forestry through his position as editor until 1923 of the Journal of Forestry. He published over 250 articles and an important book, Economics of Forestry (1902), that argued for modern forestry practices. Fernow made important contributions in education and the development of modern forestry techniques. Ralph Bryant, forestry professor at Yale wrote to Fernow shortly before his death:

> No other man has been such a potent force in the advancement of forestry in this country and the wonderful foundation will always endure (Steen 1976:46).

Fernow's successor as Chief of the Division of Forestry was Gifford Pinchot who had studied forestry at Yale and after graduation went to Europe to study forestry practices. Returning to the US in 1892, Pinchot was asked by Fernow to become his assistant. He declined and took a position managing the private forests of George Vanderbilt's Biltmore Estate near Asheville, North Carolina. He also developed forestry management plans for New York state during which time he made the acquaintance of Theodore Roosevelt. In 1897, he became involved with plans to create a forestry commission at the National Academy of

Sciences. In 1892, during western travels for this commission, he became acquainted with John Muir, Founder of the Sierra Club.

After his appointment, Pinchot argued strongly for the permanent tenure of forest land, continuous management and employment of professional foresters. Pinchot began his efforst to have the management of the Forest Reserves moved from the Department of the Interior to the Department of Agriculture, he began cooperative research programs and developed plans in increased forestation and fire protection. He fostered cooperation with the Department of the Interior and by 1901, the Agricultural Department was largely responsible for research and technical management decisions. During this period many technical reports and manuals were prepared, some of which provided the basis for fire protection studies of the next decade which advocated the development of systematic detection systems to provide early warning of fire so a quick suppression effort could follow. Pinchot also developed the program of using student assistants, which was to provide future USFS leadership for many decades to come. Arthur Ringland, first supervisor of the Southwest District, began his career as a student assistant to Pinchot in 1900. DuBois and Show, who were to conduct extensive research on fire detection systems in the coming decades, also started as student assistants. One of Pinchot's earliest and strongest emphasis was on fire protection.

In 1901, the Forestry Division was elevated to the status of Bureau and 1905, President Roosevelt transferred the forest reserves to the Bureau of Forestry in the Department of Agriculture. Pinchot soon changed the name to Forest Service and became its first chief. Two years later the reserves were renamed National Forests.

Pinchot began to develop a policy for the operation of the Forest Service and management of the National Forests. The first Use Book was published late in 1905 emphasizing the strong need for protection of the National Forests from fire. Pinchot directed duBois and Show to start research on the development of fire management plans which were to include recommendations for improved detection facilities through the construction of permanent fire lookouts.

Pinchot's contributions to the development of conservation philosophy were substatntial and he strongly advocated that responsible, regulated use of the National Forests was compatible with conservation.

The two major threats to National Forests were timber depredation and fire. The inspiration that spurred the development of the conservation movement was the exploitation of timber resources on public lands by large private lumber companies. The key to eliminating these depredations and developing sound management plans included fire protection strategies (i.e., rapid detection of fires from lookout posts).

It is in this sense that these fire lookouts are the historic physical reminders of the methods utilized to protect the National Forests, a major goal initiated through those men and women involved in the conservation movement. The fire lookouts of the Southwestern Region can perhaps best be viewed as a physical outcome of the conservation movement that developed in the United States in the last three decades of the nineteenth century. The major goal of the conservation movement was government protection and management of the natural resources on the nation's timberlands. The philosophy of the conservation movement came to dominate the political life of the nation. One of the major results was the creation of the USFS in 1905 to protect and manage the timberlands of the nation. Early emphasis was placed on the protection of the forests from fire by the development of adequate fire detection methods through systematic patrol and the development of a lookout system.

The important connection between the conservation movement and fire lookouts is that fire lookouts represent an actual physical manifestation of the movement's philosophy, namely the protection of resources. By providing early detection of fires that threatened forests, fire lookouts fill this role in a clear and concise manner.

Context 4: The Development of a Functionally Specific Architectural Style: Fire Lookout Types, Designs and Equipment (1905-1942)

In assessing the historical significance of a lookout tower, it is necessary to identify and compare individual types. Fire lookouts represent a single thematic group with a wide range of architectural designs. Thornton (1986:24-25) identifies and defines seven broad categories that include lookouts and associated structures:

1) Observation only lookout. In this category, the fire-finder is present in work area only and the lookout operator lives elsewhere. The majority in the Southwestern Region are metal Aermotor towers measuring 7 ft by 7 ft (one wood tower measures 7 ft by 7 ft), while a few are larger measuring 12 ft by 12 ft.

2) Live-in lookout. This category has the fire-finder located in the lookout operator's living quarters. It includes a variety of types: 14 ft by 14 ft Aermotor towers, blockhouse, L-4 houses, R-6 flats (CL-100-106 series) and CT-2 towers.

3) Cupola. For this category, a small cupola observatory structure containing the fire-finder was built on top of another structure to serve as a lookout. The first Forest Service standard plan was a D-6 cupola designed by Lige Coalman and in 1915 the prototype was placed on top of Mt. Hood in Oregon. It sat on top of a 12 ft by 12 ft house. The D-1 cupola designed by D.L. Beatty in the Flathead National Forest in Montana sat on top of a 14 ft by 14 ft log cabin (Kresek 1985:11-12). Although several D-1 and D-6 cupolas were constructed on mountaintops in the Southwestern region, none have survived.

4) Secondary. In this category, the fire-finder was located in a building with restricted visibility which was designed to cover blind spots of other lookouts. Although none of these types now exist in the Southwestern Region, review of old photographs suggests that in the 1920s and early 1930s some lookouts did exist that fit this description. They generally appear to have been a square or rectangular shed with an observation window on only one side.

5) Dwellings. This category is used to include all other buildings associated with lookout towers, including living quarters (cabin or frame buildings), barns, sheds, storage facilities and outhouses.

6) Portable. In the early days of the USFS in the Southwestern Region, this category included tents. Today it includes only portable trailers of which there is only one example: on the Santa Fe National Forest in New Mexico.

7) Unclassified. This category includes examples of lookouts placed on top of structures built for other purposes. No examples of this type are known for the Southwestern Region.

An alternative classification system groups lookouts by fire plan designation:

Primary: Continuous seasonal use.

Secondary: Continuous seasonal use only in times of high fire danger.

Emergency: Manned only in times of high fire danger.

Project: Used for watching a specific project, such as construction activity, that may generate fire danger to a forest.

The majority of lookouts in the Southwestern Region fit into the primary and secondary categories. The archival materials reviewed for this classification group were fragmentary and unclear as to the structures involved.

These general categories are presented as a preliminary classification only for general information. The specific design types provide the means by which historical and architectural significance can be judged.

As Thornton (1986:25) suggests, fire lookout structures reflect architectural design concepts that occurred long before the

development of organized fire detection systems. For example, residential homes and public buildings in colonial America utilized cupolas. Towers date to biblical times, and in the past two centuries various industries (farming and ranching), military forts and cities designed and built a variety of towers for observational and nonobservational use.

The lookout towers frequently have associated outbuildings, including cabins, storage sheds, privies, corrals and other structures at the site. The cabins were built to provide living quarters for the lookout guards, particularly for those sites with 7 ft by 7 ft observation towers. Information on cabin plans and designs was not always recorded. The cabins at lookout sites were not specifically designed for lookout sites, but also were used at other administrative sites. The earliest structures used for living quarters were log cabins built from materials at hand. Starting in the 1920s, these were gradually replaced by more standardized wood frame cabins. Storage sheds and privies also appear to have been built to standard plans. Barns and corrals provided shelter and confinement for horses and were common in the early decades, declining after the adoption of automobiles and trucks.

These associated structures are regarded as important parts of the lookout site complexes and also are evaluated when the inventory forms contained information on them. These associated outbuildings formed an integral part of each lookout site by providing shelter and location points for auxillary activities of the fire lookout person such as weather and rainfall monitoring, care of horses, sanitary facilities and water collection.

From an engineering standpoint, fire lookouts are relatively simple structures and have undergone few innovations over the years. The variety of types that were in existence at one time or another reflected individual innovation in the early days of the Forest Service. However, in later decades, systematic experimentation helped to achieve standardization. Lookouts also reflect, to a certain degree, the availability of local building materials and what could be reasonably transported to the proposed construction site.

The earliest lookout points were simply convenient mountaintop locations with good visibility which could be visited by fire patrolmen on their assigned routes. The first type of fire detection devices constructed at some of these sites was a simple alidade and protractor placed on a tree stump, post or rock so a precise bearing could be obtained Judging from photographic evidence, some of these temporary locations were utilized into the early 1930s, and later became the sites of permanent lookout structures.

At about the same time (ca. 1905-1920), lookout trees appear. In areas lacking a clear mountain top to set up a protractor and alidade, a lookout tree was utilized. A tall tree was selected that would afford a good view and the top of the tree was modified to support a crude platform. Access was provided by spikes driven into the side of the tree or by wooden ladders. Usually not permanently manned, lookout trees were probably utilized most commonly by the fire patrolman as he made his rounds of the district. They were also utilized in lower elevations to obtain a quick observation point when a more permanent lookout could not provide adequate information. Fire crews may have used lookout trees to moniter the progress of a fire or watch for spotfires. In some cases more elaborate platforms were constructed on the tops of trees and a small cabin built nearby which suggests more permanent use. Lookout trees are frequently found in the vicinity of modern day lookouts, indicating long-term use of the site for fire detection. While lookout trees were identified in the survey, they were not evaluated as part of this nomination.

The first observation-only wooden towers probably were constructed before World War I and into the early 1920s. Many of these early timber towers represent a design type borrowed to some degree from the oil and railroad industries (Thornton 1986:29). There was little standardization. A wide variety of styles was evident. Some of these early towers were constructed of logs cut on the site while others appear to have been constructed with commercial timber. Most of these early wooden towers used an x-brace construction design, although a few used a z-brace design. Most of the platforms on top of the towers were roofless and open on the sides with only a guardrail. A few were enclosed on the sides and a few had roofs. The San Antone Lookout in the Carson National Forest in New Mexico, probably constructed in the early 1920s, had a short tower attached directly to a log cabin. This unusual lookout survived into the late 1940s when it was razed by the USFS. None of these towers appear to have had any lightning protection.

It is of interest to note that in a 1919 photograph of the Sentinel Lookout Tower on the Chiricahua National Forest (now part of the Coronado National Forest) a telephone box can be clearly seen. Most fire guards stationed at a lookout in the early years of the Forest Service had to ride to a fire and extinguish it themselves or ride for help back to the ranger station. The need for better communication became an early focus of USFS research efforts (Gray 1982). The need to detect a fire and quickly report it necessitated the development of good field communication.

A variety of methods was used including the telephone, carrier pigeons, heliograph stations and later radios. The earliest record of telephone use comes from the Siskiyou Forest Reserve in Oregon in 1905 (Adams 1906:468). The first telephone built and owned by the Forest Service, a 109 mile section on the Big Horn Forest Reserve in Wyoming, was constructed in 1906 (Adams 1906:468). In the Southwestern Region telephone lines installed on the Gila National Forest as early as 1914 connected a lookout on Center Baldy to the Little Dry Creek Ranger Station. Spoerl (1981a:8) cites the Alamo Advisor of April 1911 which reported the construction of telephone lines on the Fairchild Ranger District of the Lincoln National Forest in New Mexico. By the early 1920s, most fire lookouts in the Southwestern Region had a telephone link to the outside world.

The USFS in cooperation with the Vermont State Forestry Department began researching the use of the radio for communication as early as 1909 (Gray 1982:19). The Southwestern Region of the USFS made important early contributions to the development of the radio for communication purposes. In 1916 William R. Warner, posted at the Baseline Ranger Station on the Apache National Forest in eastern Arizona, was faced with the problem of stringing an expensive telephone line to his isolated ranger station. Gray (1982:19-20) reports that Warner, inspired by an amateur radio antenna he observed at a local ranch, purchased a similar radio from a mail order firm, constructed an antenna and started to experiment with transmitting. He caught the attention of R.V. Slonaker, a telephone engineer for the Southwestern District, who had, in 1914, recommended radio experiments in the Carson National Forest in New Mexico. On November 26, 1917, Warner transmitted the first official USFS wireless message from the Baseline Ranger Station on the Apache National Forest to Clifton, Arizona, a distance of forty miles.

Warner's experimental work was significant in that it encouraged the Southwestern District (Region) to conduct further research. Other forests in various parts of the country followed the lead of the Southwestern Region. In the late 1920s, the USFS regarded the radio as inadequate and too expensive (Grey 1982:28-29) so they curtailed the research for nearly five years. However, the first steps toward a modern communication system had been taken. By the early 1920s, some steel observation towers began to appear in the National Forests of the Southwestern Region. Historic photographs indicate that although the platforms are different, most of the towers were similar, utilizing an x-brace support system. These towers may have been manufactured by the Aermotor Company of Chicago, Illinois. An early brochure issued by this company (Aermotor 1903) shows tower designs very similar to these early steel lookout towers It is not known how many of these steel platforms were erected in the Southwestern Region.

Although standardization of lookout designs was not to be accomplished until the 1930s, the effort in this direction started two decades earlier. In his study of lookouts in California, Thornton (1986:14) mentioned early research on fire detection by Coert duBois as being significant in the development of modern techniques. In 1911, duBois, developed a plan for fire detection in the Stanislaus National Forest. He stressed the designation of key mountain tops as permanent lookout points and the recording of fire statistics. Graves (1910) had introduced the concept of "primary" lookouts several years earlier.

In 1914, duBois published a comprehensive study of fire control (duBois 1914). He introduced a standardized plan for a 12 ft by 12 ft wooden live-in cab and also recommended the use of Aermotor Company steel observation towers. Thornton (1986:15) reports that in 1917, duBois presented Plan Number 4-A, Primary Lookout Building Standard for District 5, which was for a 14 ft by 14 ft wood live-in cab. This plan established a basic design and floorplan for all live-in cabs built since that time. It is important to note that the major fire detection research sponsored by the USFS occurred in Region 5 from 1914 through the late 1930s. This research had an influence in other regions largely through the publication of articles on fire management in USDA journals. Other regions also conducted research and contributed to the modification and development of lookout design.

The early wooden live-in lookout towers in the Southwestern Region were modeled to some extent after the duBois design. Early photographs show lookouts on the Kaibab and Gila National Forests in the early 1920s that closely resemble the tower cabs in the duBois designs. The assumption is that they represented local design plans for which information is unavailable.

One of the early USFS standard lookout plans was the D-6 cupola designed by Lige Coalman in Oregon. The first D-6 cupola was placed in 1915 on top of Mount Hood outside of Portland, Oregon. The lower part of the frame house measured 12 ft by 12 ft with windows all around and a glassed-in observatory cupola on the roof. Kresek (1985:11) reports that over two hundred D-6s were built on mountaintops in Oregon, Washington, Idaho and Montana. While the D-6 cupola did not become as popular in the Southwestern Region, there were a number of them erected. on the Coronado, Coconino and Cibola National Forests. Unfortunately, none of these have survived. The D-6 cupola lookout houses represented one of the most attractive architectural forms in the variety of fire detection structures. Fortunately, a number have survived in the National Forests of the Northwest.

The history of fire lookouts in the Southwestern Region has been one of type replacements over the years. The early nonstandardized towers were gradually replaced in many cases by Aermotor Company towers.

In the late 1920s, the L-4 lookout house came into prominence. It appears that this 14 ft by 14 ft structure was based largely on the earlier designs of duBois (1916). A number of these were built in the Southwestern Region and some have survived. The earliest L-4s had a gabled roof with heavy shutters that provided shade over the windows. The models built from 1933 to 1953 have a hip roof (Kresek 1985:11). Over a thousand of these L-4s were erected nationwide: some on the ground, but many on a tower. The L-5 was a scaled down L-4 which measured 10 ft by 10 ft. Kresek (1985:12) reports the L-5 was a log version of the L-4 designed on the the Nez Perce National Forest in Idaho.

The Aermotor Company of Chicago, Illinois, began manufacturing windmills, pumps and tanks in 1888 at 110 - 112 South Jefferson Street. The first president of the company was L.W. Noyes. This company came to have a special relationship with the USFS as a major supplier of prefabricated steel lookout towers. Endorsed by duBois in his 1916 report, some Aermotor towers were erected in the Southwestern Region in the 1920s:

Deer Springs, Apache-Sitgreaves National Forest, 1923
Promontory, Apache-Sitgreaves National Forest
(at one time the tallest tower in the region), 1924
Weed, Lincoln National Forest, 1926
Mayhill, Lincoln National Forest, 1927
Rose Peak, Apache-Sitgreaves National Forest, 1929

The Aermotor Company provided thousands of lookout towers for both federal and state forestry departments for over fifty years. The company moved to several different locations in Chicago and remained in business until the late 1960s. Nearly fifty percent of the lookouts in this study are Aermotor towers. A variety of types was made: MC-39, LX-24, MC-99, MI-25. MC-24, LL-25 and LS-40. They differ primarily in design of cab shape, windows, stairs, ladder placement and size.

The earliest cabs on the towers measured 7 ft by 7 ft. Later, the Aermotor Company built larger cabs (up to 14 ft by 14 ft) that could be lived in. Cabs were constructed of both steel and wood. The towers were all battered (slanting gradually inward from the base; a lookout tower whose support members are not perpendicular with the plane of the ground surface) steel and utilized an x-brace support design.

On the Lincoln National Forest in New Mexico, the Monjeau lookout, constructed in 1940 by the Civilian Conservation Corps, represents one of the most attractive and unusual types in the Southwestern Region. It is constructed of native stone with the living quarters located underneath the 7 ft by 7 ft observation cab. Illustrated in the 1938 USFS Standard Lookout Structure Planbook, Monjeau attracts thousands of visitors each year and is regarded as the pride of the Lincoln National Forest (Irwin 1986:1-5).

The lookout towers frequently have associated outbuildings, including cabins, storage sheds, privies, corrals and other structures at the site. The cabins were built to provide living quarters for the lookout guards, particularly for those sites with 7 ft by 7 ft observation towers. Information on cabin plans and designs was not always recorded. The cabins at lookout sites were not specifically designed for lookout sites, but also were used at other administrative sites. The earliest structures used for living quarters were log cabins built from materials at hand. Starting in the 1920s, these were gradually replaced by more standardized wood frame cabins. Storage sheds and privies also appear to have been built to standard plans. Barns and corrals provided shelter and confinement for horses and were common in the early decades, declining after the adoption of automobiles and trucks. These associated structures are regarded as important parts of the lookout site complexes and also are evaluated when the inventory forms contained information on them.

Lookout designs became standardized in the early 1930s. The research of Show and Kotch (1937a,b) in Region 5 at the Pacific Southwest Forest and Range Experiment Station was influential in the trend toward standardization that culminated with the publication of the Standard Lookout Structure Planbook in 1938. With the large pool of labor available through the creation of the Civilian Conservation Corps (CCC) and allied relief programs, the construction of lookouts accelerated in all regions of the country. Most of the lookouts built by the CCC in the Southwestern Region between 1933 and 1942 were constructed utilizing standard plans. By standardizing plans and preselecting sites, the USFS could order and ship all the necessary material to the regional or district offices.

The standardized plans included designs for cupola houses (D-6), towers and cabs. It is difficult to identifiy specifically all of the plans due to the multiplicity of designs being generated in different

regions that eventually were brought together in the 1938 planbook. The plan drawings for the different design types readily identifiable in the Southwestern Region are shown in Figures 2 - 18. It should be noted that some of the plans represent lookouts that once existed in the Southwestern Region, but have since been destroyed and replaced.

Aermotor towers were incorporated into the standard plans. The USDA USFS L-1400 series standard plan represents a generalized Aermotor tower and cab. Other standard plans included the CI-1 observation-only and the L-501 wood platform. Standard plans for 12 ft by 12 ft and 14 ft by 14 ft observation live-in lookout structures included a variety of Aermotor type designs, the USFS CI-2 and the CL-100 to CL-106 series for towers and cabs.

The USFS in Region 3 (Southwestern) made extensive use of Aermotor towers. As mentioned earlier, they represent nearly one-half of the surviving lookout towers. The earliest ones date to the mid-1920s with the most recent ones dating to the 1960s. Several wood CI-1 and CI-2 towers were constructed at the time of World War II which may be reflective of metal shortages.

After the war, a few Aermotor towers were erected, but overall the number of new lookouts constructed dramatically dropped until the advent of the Increased Manning Experiments during the 1950s and 1960s when nearly twenty new lookouts were built, almost all on the standardized plan from the CL-100 to CL-106 series. These types, also known as R-6 "flats", were placed on steel towers and on concrete blockhouse bases.

There are a few lookouts in the Southwestern Region that were designed by companies other than the Aermotor Company, including the International Derrick Company, the Pacific Coast Steel Company and the McLintock-Marshall Construction Company.

The International Derrick Company provided steel towers and 7 ft by 7 ft steel cabs for lookouts on the Coconino National Forest (Lee Butte) and the Lincoln National Forest (Bluewater) in the 1930s. Both of these lookouts closely resemble Aermotor styles. No information was found on this company.

The Pacific Coast Steel Company designs were utilized for several lookout towers on the Coconino National Forest (Woody Mountain) and the Prescott National Forest (Horsethief, Towers Mountain and Mingus Mountain). The Pacific Coast Steel Company was incorporated in 1909 in San Francisco, California, for the manufacture of a variety of

metal products including towers. In 1922 the company increased capital stock issues and became financially over-extended. The company was dissolved by court order in 1936 (Pacific Coast Steel 1909-1936). Their designs also were very similar to Aermotor Company types.

The McLintok-Marshall Construction Company of Pennsylvania and California also was involved in the construction of a lookout on the Prescott National Forest (Mingus). This company, incorporated in 1900 in Pennsylvania, was owned by H.H. McLintock, C.D. Marshall, and Andrew and Richard Mellon. The Mellon family of Pittsburgh provided the financial backing for the company which became a very large and prominent manufacturer of structural steel. The Mellons were responsible for the manufacture of the structural steel elements for the locks of the Panama Canal, the Grand Central Railroad Station in New York, the George Washington Bridge in New York, the Golden Gate Bridge in San Francisco and the RCA building in New York. The company was bought for 70 million dollars in 1931 and incorporated as part of Bethlehem Steel. The company apparently had a small subdivision that designed and constructed steel towers and cabs.

One piece of lookout equipment that deserves mention is the fire-finder, a device used to locate a fire on a map and a key element of equipment in a lookout of any design type. It determines the lookout operator's working location.

Several different fire-finders have been developed and utilized over the years. The Godwin fire-finder developed in 1912 was endorsed for use in Region 5 in 1914 (Thornton 1986:25). However, it was large and cumbersome and required a large platform that made it difficult to use in the small 7 ft by 7 ft observation lookouts.

In 1911, William B. Osborne, an engineer working on the Mt. Hood National Forest, developed the fire-finding instrument that was to bear his name and become a standard piece of equipment on almost all USFS lookouts. The Osborne, scaled down in size in 1934, became the standard for all lookouts. It was first used on the Larch Mountain lookout, Mount Hood National Forest in 1914. Similar to an engineer's transit, it was a high-precision instrument with accuracy to one-sixtieth of a degree. Many other fire-finders would appear over the years: the Koch Board, the Minnesota in 1949, the Kentucky, the Arkansas and the Wisconsin Conservation Department (Kresek 1985:29). All would be short-lived.

The prevention of wildfire was a major goal of the USFS from its inception. The detection of fires from lookouts placed at strategic locations on mountaintops became a major goal. Henry Graves (1910), Chief Forester, urged a concentrated effort at developing an improved fire detection system. The USFS at its Pacific Southwest Forest and Range Experiment Station in California supported research to develop an improved fire management system that included the construction of many new fire lookouts. The depression during the 1930s created a surplus of labor that was utilized through the CCC program to accomplish the construction of many new lookouts. Since that time the USFS has increasingly devoted financial and research efforts into developing alternate means of detection including aerial patrols and automated devices.

Fire lookouts have been on the decline since the end of World War II across the nation. The Increased Manning Experiment in the late 1950s and early 1960s provided a brief respite. It is estimated that fifty percent of the lookouts constructed in the Southwestern Region between 1905 and 1941 has disappeared. Some have been moved to new locations, some have been lost to fire, but the majority have been replaced by newer models or the sites abandoned.

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National Forest Fire Lookouts in the Southwestern Region, USDA Forest Service

Significance

The fire lookouts and associated structures included in this thematic nomination have three major areas of significance: architecture, conservation and politics/government.

Architecture

USFS fire lookouts as a thematic group are significant under Criterion c - 36CFR60.6(c) in that they embody the evolution of a distinct architectural style which over time became characterized by standardized plans as a result of specific functional requirements related to fire detection. As a thematic group they represent a range of architectural styles. The lookouts and support structures in this thematic group are the physical remains of the traditional USFS role of fire protection. The types and styles of lookouts represent different periods in the architectural evolution of the lookout and historical developments in fire detection and suppression. They have evolved from simple tree lookouts with an associated tent in the 1910s and 1920s, through log or frame structures connected by telephones in the mid-1920s and early 1930s, to the numerous and standardized L-4s and Aermotor steel towers built in the 1930s and 1940s. The architecture of these lookouts and support structures is reflective of functional needs and has come to represent one of the USFS's most well known symbols of fire protection in the National Forests.

Conservation

USFS fire lookouts as a thematic group are significant under Criterion a - 36CFR60.6(a) for their association with the US conservation movement which began in the decade following the Civil War and still remains a potent political and philosophical force. Fire lookouts represent a distinct thematic group within the history of wildland fire management which in turn was a major component of the conservation movement in the US. In Arizona, the forests along the Mogollon Rim have one of the highest rates of lightening known in the US, so the threat of wildfire was and remains real and continuous for three to four months of the year.

The lookouts and their associated support structures represent the physical manifestation of the conservation movement's philosophy of land protection that was put into direct action with the Forest Reserve Act of 1891, the Organic Act of 1897 and the Transfer Act of 1905 that established the USFS as an independent agency within the Department of Agriculture! The goal of the conservation movement was to protect the nation's natural resources and with the establishment

of the USFS in 1905 under the strong leadership of Gifford Pinchot, the protection and management of the nation's timberland resources became a reality. The lookouts and support structures in this thematic group represent a strong, clear, physical manifestation of the conservation movement.

Politics/Government

USFS fire lookouts as a thematic group are significant under Criterion a - 36CFR60.6(a) for their direct association (1) with history and the development of the USFS in the Southwestern Region as it related to an active management program for fire protection through rapid detection and suppression and (2) with the political and legislative events of Roosevelt's New Deal policies, in particular, the development, implementation and operation of the CCC directly in USFS projects. The CCC provided the USFS with the labor necessary to complete the development of a large and systematic fire detection network which had been strongly suggested by USFS fire researchers for nearly two decades. The lookouts also reflect certain changes in USFS administration and management of the forests of the Southwestern Region that centered for many years on the goal of rapid detection and suppression of wildfires. The lookouts were the key in this situation providing that early warning that allowed a wildfire to be attacked while still at a manageable stage.

From its inception in 1905, the USFS assumes a central institutional and intellectual role in fire control programs by its control of National Forest systems, development of cooperative programs of fire prevention with states and other federal agencies and by introducing professional forestry standards from Europe into the development of fire policy. The evolution of the US fire control program took place within the USFS. The fire lookouts represent a physical manifestation of this policy.

The lookouts represented the first step in a fire management policy, to discover the fire quickly and report its location accurately. They represent distinctive and specialized structures. They have served for a long time as a universal symbol of organized protection.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

Please see Continuation Sheets.

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY See Continuation Sheet.

UTM REFERENCES See Continuation Sheets.

	ZONE	EASTING	NORTHING
A			
B			
C			
D			

VERBAL BOUNDARY DESCRIPTION

Please see individual inventory sheets, #7.

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
Arizona	04	Various, see Continuation Sheets	Various, see Continuation Sheet
New Mexico	35	Various, see Contination Sheets	Various, see Continuation Sheet

11 FORM PREPARED BY

NAME / TITLE

Peter L. Steere, Principal Investigator and Historian

ORGANIZATION — DATE

Cultural & Environmental Systems, Inc. — July 1987

STREET & NUMBER — TELEPHONE

P.O. Box 2324 — (602) 622-2782

CITY OR TOWN — STATE

Tucson — Arizona 85702-2324

12 CERTIFICATION OF NOMINATION

STATE HISTORIC PRESERVATION OFFICER RECOMMENDATION

YES ✓ NO ___ NONE ___

Kareen Berner

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

STATE HISTORIC PRESERVATION OFFICER RECOMMENDATION

YES ✓ NO ___ NONE ___

Thomas C. D. Charlton

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

In compliance with Executive Order 11593, I hereby nominate this property to the National Register, certifying that the State Historic Preservation Officer has been allowed 90 days in which to present the nomination to the State Review Board and to evaluate its significance. The evaluated level of significance is ___National ___State ___Local

FEDERAL REPRESENTATIVE SIGNATURE

TITLE — DATE

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST: DATE

KEEPER OF THE NATIONAL REGISTER

GPO 899-214

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National Forest Fire Lookouts in the Southwestern Region, USDA Forest Service

GEOGRAPHICAL DATA FOR NOMINATED PROPERTIES

Forest/Property	Quad	UTM	Acreage	State	County
Apache/Sitgreaves NF					
PS Knoll Lookout Complex	Big Lake	12/648400E/3735900N	Less than 1	AZ (04)	Apache (001)
Bear Mountain Lookout Complex	Blue	12/672350E/3711750N	1.4 acre	AZ (04)	Greenlee (011)
Lake Mountain Lookout Complex	Sponseller	12/613520E/3780140N	Less than 1	AZ (04)	Apache (001)
Deer Springs Lookout Complex	Clay Springs	12/553350E/3796100N	Less than 1	AZ (04)	Navajo (017)
Promontory Butte Lookout Complex	Promontory Butte	12/498900E/3802700N	Less than 1	AZ (04)	Coconino (005)
Carson NF					
Canjilon Mountain Lookout Cabin	Cebolla	13/379150E/4047600N	Less than 1	NM (35)	Rio Arriba (039)
Coconino NF					
Moqui Lookout Cabin	Blue Ridge Reservoir	12/484785E/3824550N	Less than 1	AZ (04)	Coconino (005)
Woody Mountain Lookout Tower	Belleaont	12/431755E/3888880N	Less than 1	AZ (04)	Coconino (005)
Moraon Lake Lookout Cabin	Moraon Lake	12/460860E/3860360N	Less than 1	AZ (04)	Coconino (005)
Buck Mountain Lookout Tower	Happy Jack	12/461990E/3835980N	Less than 1	AZ (04)	Coconino (005)
Lee Butte Lookout Tower and Cabin	Stoneman Lake	12/450970E/3854610N	Less than 1	AZ (04)	Coconino (005)
Coronado NF					
Atascosa Lookout House	Ruby	12/486100E/3476120N	Less than 1	AZ (04)	Santa Cruz (023)
Barfoot Lookout Complex	Rustler Park	12/663275E/3532280N	Less than 1	AZ (04)	Cochise (003)
Leaaon Rock Lookout House	Mt. Leamon	12/519850E/3588475N	Less than 1	AZ (04)	Pima (019)
Webb Peak Lookout Tower	Webb Peak	12/601030E/3619620N	Less than 1	AZ (04)	Graham (009)
West Peak Lookout Tower	Blue Jay Peak	12/590175E/3622420N	Less than 1	AZ (04)	Graham (009)
Heliograph Lookout Complex	Mt. Graham	12/607960E/3612880N	Less than 1	AZ (04)	Graham (009)
Monte Vista Lookout Cabin	Chiricahua Peak	12/659500E/3522100N	Less than 1	AZ (04)	Cochise (003)
Silver Peak Lookout Complex	Portal	12/670325E/3531200N	Less than 1	AZ (04)	Cochise (003)
Gila NF					
Mogollon Baldy Lookout Cabin	Mogollon Baldy Peak	12/724120E/3683780N	Less than 1	NM (35)	Catron (003)
Mangas Mountain Lookout Complex	Mangas Mountain	12/748620E/3771000N	Less than 1	NM (35)	Catron (003)
Reeds Peak Lookout Tower	Reed's Peak	13/233780E/3670600N	Less than 1	NM (35)	Grant (017)
Bearwallow Mountain Lookout Complex	Bearwallow Mountain	12/716810E/3703340N	1.8 acre	NM (35)	Catron (003)
Black Mountain Lookout Cabin	Black Mountain	12/758000E/3696440N	Less than 1	NM (35)	Catron (003)
Hillsboro Peak Lookout Tower and Cabin	San Lorenzo	13/240260E/3649260N	Less than 1	NM (35)	Sierra (051)
El Caso Lookout Complex	Slaughter Mesa	12/731110E/3776220N	Less than 1	NM (35)	Catron (003)

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CONTINUATION SHEET ITEM NUMBER 10 PAGE 3

GEOGRAPHICAL DATA FOR NOMINATED PROPERTIES

Forest/Property	Quad	UTM	Acreage	State	County
Kaibab NF					
Jacob Lake Lookout Tower	Jacob Lake	12/391650E/4062050N	Less than 1	AZ (04)	Coconino (005)
Big Springs Lookout Tower	Big Springs	12/380650E/4050400N	Less than 1	AZ (04)	Coconino (005)
Dry Park Lookout Cabin and	DeMotte Park	12/389100E/4034650N	Less than 1	AZ (04)	Coconino (005)
Storage Sheds				AZ (04)	Coconino (005)
Kendrick Lookout Cabin	Kendrick Peak	12/423180E/3918450N	Less than 1	AZ (04)	Coconino (005)
Volunteer Lookout Cabin	Garland Prairie	12/418560E/3897380N	Less than 1	AZ (04)	Coconino (005)
Grandview Lookout Tower and Cabin	Grandview Point	12/413950E/3979475N	Less than 1	AZ (04)	Coconino (005)
Lincoln NF					
Monjeau Lookout	Angus	13/432020E/3699100N	Less than 1	NM (35)	Lincoln (027)
Wofford Lookout Complex	Cloudcroft	13/433640E/3650940N	Less than 1	NM (35)	Otero (035)
Ruidoso Lookout Tower	Ruidoso	13/438400E/3688070N	Less than 1	NM (35)	Lincoln (027)
Bluewater Lookout Complex	Avis	13/456440E/3622500N	Less than 1	NM (35)	Otero (035)
Weed Lookout Tower	Sacramento	13/447640E/3629770N	Less than 1	NM (35)	Otero (035)
Carrisa Lookout Complex	Bear Spring	13/441960E/3615360N	Less than 1	NM (35)	Otero (035)
Prescott NF					
Mount Union Lookout Cabin	Groom Creek	12/371860E/3809800N	Less than 1	AZ (04)	Yavapai (025)
Mingus Lookout Complex	Hickey Mountain	12/396765E/3839510N	Less than 1	AZ (04)	Yavapai (025)
Hyde Mountain Lookout House	Camp Wood	12/324490E/3856500N	Less than 1	AZ (04)	Yavapai (025)
Santa Fe NF					
Glorieta Baldy Lookout Tower	McClure Reservoir	13/427650E/3945220N	Less than 1	NM (35)	San Miguel (047)
Tonto NF					
Diamond Point Lookout Cabin	Diamond Point	12/482320E/3793850N	Less than 1	AZ (04)	Gila (007)

APPENDIX B

Completion of the National Register evaluations and nominations of the Southwestern Region's many lookout sites was a large task. It is doubtful that one or two persons could have visited all of the sites, many accessible only by pack trail, in an efficient manner. Travel time to the lookout sites from the Regional Office, or a contractor's base, would have consumed the whole budget for the project.

After weighing the options, it was decided to do the job with a combination of contracted skills and Forest personnel. All of the sites on a given National Forest would be recorded by employees of that unit. Then the notes and photographs would be sent to the contractors. The materials in this Appendix indicate how the job of field recording was directed.

Use of standard recording formats was essential and no more than the usual routine followed for recording cultural sites. The basic site form used was the standard Form R3-2300-2 which was slightly modified by provision of pre-filled boxes for data that would be constant. The special "R-3 Fire Tower Inventory Form" (an adaptation from the Eastern Region) simply extended existing procedures.

Standardization of film with 35 millimeter Kodak Panatomic X simplified work in the photo laboratory where processing times and chemistry could be kept constant. Also useful was the instruction that required a full role of film to be used at each site. This ensured that there would be no confusion of properties when the contractors studied each set of photographs.

As first conceived, recording would have been done by people who normally work with facility maintenance, but Forest Archeologists generally preferred to keep the work in their staff. In some cases the recording work was done by the Forest Archeologist. Para-archeologists often did the recording, perhaps with the assistance of someone from the Ranger District. Instruction sheets were written to ensure that similar results would be obtained from a wide range of people. All of the material shown here, along with a cartridge of film, was stapled together. One of these packages was provided to the Forest Supervisor for each known lookout site.

Another part of every package was a sheet of information explaining data requirements for parts 7 and 8 of the National Register form. This was a cut-and-paste summary of information available in the Keepers' publications. It was expected that better recording would result if the field people knew what use was to made of the information.

As the field season progressed, the completed forms and exposed films were sent to the Regional Office. Robert MacMahon, in the Regional Office Photo Lab, processed the film and made proof sheets for use by the contractors. Later, enlargements and archival prints were made for the evaluation and nomination phases of the project. The paperwork, including additional documentation which may have been found by the field workers, was duplicated and then also sent to the contractors.

FIRE LOOKOUT RECORDING INSTRUCTIONS

INTRODUCTION

All fire lookouts in the Southwestern Region will be evaluated to determine if they are eligible for listing on the National Register of Historic Places. A lookout which is found to lack the characteristics needed for eligibility will be removed from further consideration of Historic Preservation Act compliance issues. Eligible sites will be listed on the National Register and managed for protection of the historic qualities.

The process of nomination to the National Register is sometimes more economical if a class of property is considered, rather than the individual sites. In the case of fire towers or ground cabins, the relatively small number of properties in this Region makes this a reasonable target for a thematic nomination. One advantage is that viewing the class as a whole eliminates false impressions of unique values and may result in a smaller group actually eligible.

In order to expedite the nomination process, all Forests are being asked to follow a standard recording process. This will make it easier to compare and contrast the values at various sites. It also eliminates the need to "reinvent the wheel" by each person who records a site. To this end, a package of forms and instructions will be provided for each site. Following the instructions in this package should make it a fairly straight-forward process. Additional forms and supplies will be provided from the Regional Office on request.

FORMS

[If you need extra copies of any forms or other supplies, ask for more from your Forest Archeologist]

Standard Site Form (R3-2300-2) modified for this project

1. This will be used to record the whole site which includes a fire tower or ground cabin and support buildings.

2. Only the first two pages of a standard site form are used. The Forest Archeologist or para-archeologists can give instructions on the use of this form.

3. About 25% of the blocks are already filled in to standardize certain types of data.

R-3 Fire Tower Summary Sheet

1. This is an adaptation of a R-9 form developed to inventory all fire towers in that Region.

2. This form will serve as a summary and cover sheet for the package.

3. It will be particularly useful to include information on this form about the kinds of building materials used in the structure. The other site form does not allow for recording much detail of this type. Specify colors of paint, types of shingles and any other details that may indicate either a departure from or conformance with original specifications for the structure.

Photograph record

1. Each exposure made will be recorded. Enough information about the scene must be provided to allow captioning of the printed photograph.

2. The Regional Office provides the film for this project and one complete roll of 35 mm film (20 exposures) should be used at each site. To ensure that no prints are mis-identified at the Regional Office, **only one site** should be photographed on each roll of film.

3. Processing and printing to archival standards (a National Register requirement) will be provided at the Regional Office. Return the film and all forms to the Forest Archeologist who will check data and forward the whole package to the Regional Office.

Map - USGS

1. National Register Nominations require a **full sheet** USGS map, usually of 1:24,000 scale for each nomination.

2. One quadrangle will be provided to the SO for each recording package. This should be marked **in pencil** with the site location and returned to the SO. Indicate on the map the exact UTM location of the tower. If you are not familiar with the UTM system, any para-archeologist can help with the calculations.

3. If there are associated buildings or other support equipment at the site, also mark on the map the boundaries which enclosed all of these. The National Register is very fussy about knowing why a specific boundary was selected for a site. The entire top of a small peak is easily justified for a lookout boundary; in a featureless area, you will need to consider what the actual use area was when the lookout was active.

Map - Forest 1:250,000

1. Include a xeroxed letter-size copy of a portion of the Forest Map to show the general location of the fire tower.

Sketch Map - Use the non-photo blue grid paper provided

1. The lookout site will be sketched to show relative positions of all buildings.

Questions and Answers

What to Inventory? - All fire lookout sites with standing towers or ground cabins along with other buildings that are part of the lookout.

Why Are We Doing All This? - Maintenance efforts at fire towers are running afoul of the provisions of the historic preservation laws and regulations. Until we determine which sites should be preserved as National Register properties, we will have difficulty with SHPOs whenever we try to do repairs and renovations. By assessing eligibility of the entire class at once, we increase the liklihood that many of them will be found ineligible. Once a site is determined to be ineligible for the National Register, we can proceed with any future maintenance with no further contact with SHPOs.

What Does the RO Supply? - A package for each tower site that includes all required forms, 35 mm film, and a USGS quadrangle.

What Does the Forest Supply? - Someone to travel to the fire tower and accomplish the recording work; copies of any supporting documents that may be available (such as historic photos, first-person accounts, blueprints, etc.)

What Happens to the Package? - Everything is returned to the RO via the SO. The film will be developed and printed by an RO technician. Information on the forms will be transferred to the National Register nomination forms, by an historical architect working under personal contract, and evaluated. Maps will be inked and all National Register requirements fulfilled. The best photos of each eligible site will be enlarged and printed as archivally stable pictures. Prints of all photos, along with copies of the recording forms, will be sent to the Forest Supervisor at the conclusions of the project. Finally, site forms will be entered in the FCCC data base by the Forest Archeologist.

What Will This Cost? - For the individual Forests, the cost should be about 12 hours of work per site to travel to the lookout, record the data, and gather supporting documents. Most of the cost of materials, and all of the cost of preparation of the finished nomination forms, will be paid for by Engineering and Recreation in the Regional Office.

Procedures

Each site should be recorded by a person who is familiar with fire facilities with guidance of a para-archeologist and/or the Forest Archeologist. At the site, photographs will be taken with a 35 mm camera on the film provided by the RO. Entries will be made as called for by the several forms provided.

R-3 FIRE TOWER INVENTORY FORM

TOWER NAME:

YEAR OF CONSTRUCTION:
STANDARD PLAN NO:

BUILT BY:

SITE NUMBER : AR - 03 - - -

FOREST: STATE:
DISTRICT: COUNTY:

USGS QUAD:
UTM: ZONE: E: N:

ORIGINAL USE:
CURRENT USE:

RECORDED BY:
DATE:

ORIGINAL CHARACTER (Complete if differs from Plan)	MAJOR ALTERATIONS & DATES (Orig. location: __ Yes __ No)
TOWER:	
CAB:	
ASSOCIATED STRUCTURES:	

CURRENT CONDITION:

CONSTRUCTION MATERIALS

Paint Colors
Roof
Exterior
Ceilings
Walls
Int. Woodwork
Floors
Steps

POTENTIAL HISTORICAL SIGNIFICANCE:

ATTACHMENTS:

EVALUATION RESULTS:

___ NOT ELIGIBLE ____ ELIGIBLE

___ SHPO CONCURRENCE (DATE: _____)
___ DETERM. OF ELIGIBILITY (DATE: _____)
___ ADDED TO REGISTER (DATE: _____)

Fire Tower Thematic Nomination Project



Forest _____ NO._____

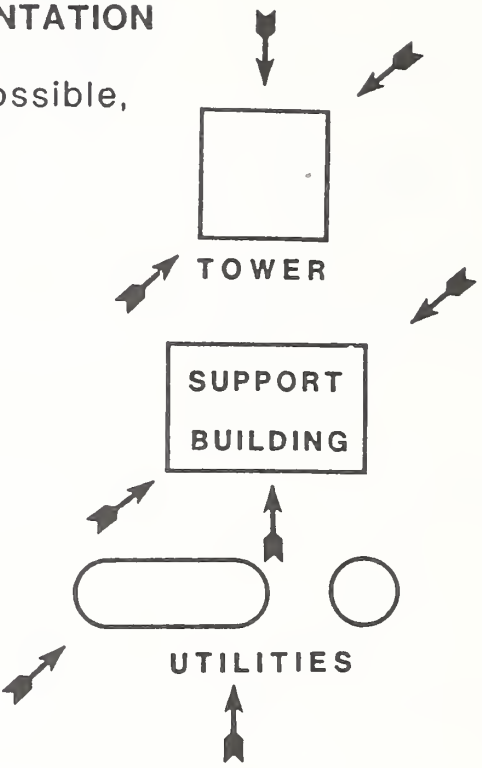
Tower Name _____

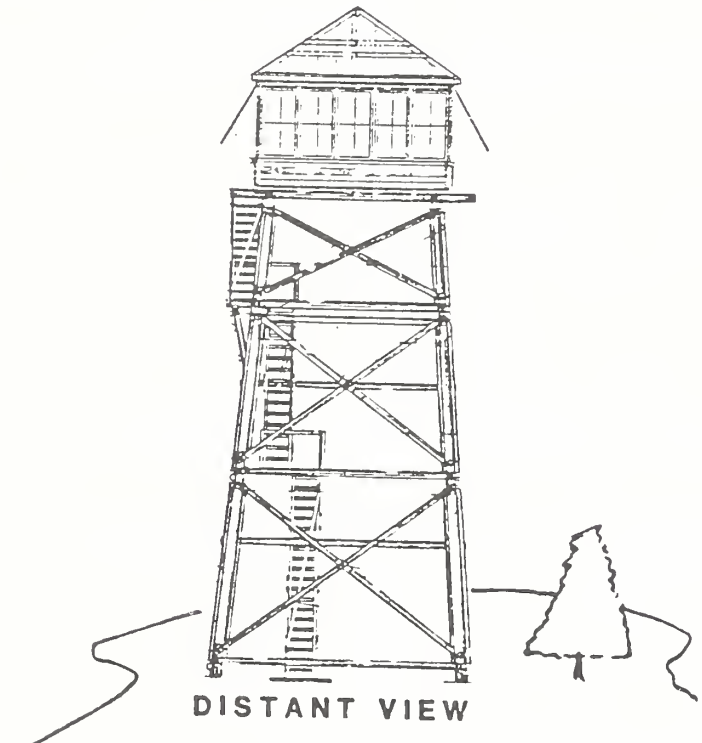
(Year - Initials - Roll)
example : 1986-DAG-1

DATE	PHOTO#	SUBJECT & DESCRIPTION	DIRECTION	UNIT
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			
	10			
	11			
	12			
	13			
	14			
	15			
	16			
	17			
	18			
	19			
	20			

LOCATION DIAGRAM FOR SHOOTING
DESIRED VIEWS FOR PHOTO DOCUMENTATION

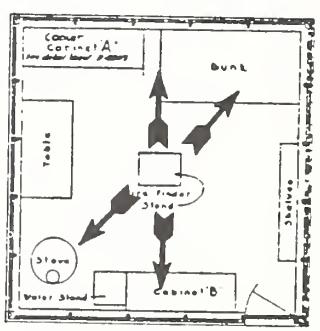
Shoot opposite diagonals, when possible,
and elevation view.



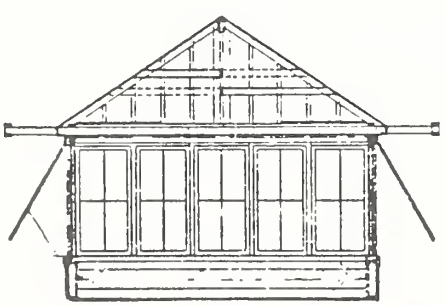


DISTANT VIEW

(TO SHOW WHOLE TOWER AND SITE SETTING)

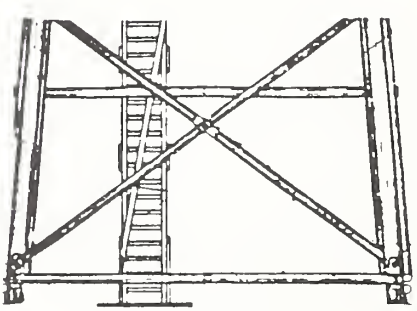


CAB INTERIOR



CLOSE VIEW OF CAB

SHOWING MATERIALS --
when height of tower or telephoto lens permits



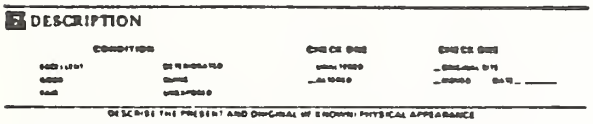
TOWER BASE

showing ladder or steps

For the person who must complete the National Register forms, the sections of DESCRIPTION and SIGNIFICANCE are the most difficult. The following material is to show you the things that must be considered so that you can provide helpful information.

FOR INFORMATION ONLY

Description



A description of the physical appearance and condition of a property is important in making an accurate assessment of its significance. To be useful, the description of the property should be concise, factual, detailed, and well organized. Information on preparing descriptions of archeological sites and districts may be found in Appendix II.

Building, Structure, Object

Individual buildings, structures, or objects should be described in detail using appropriate professional terminology. Unique details or unusual features should be noted and should be visible in the accompanying photographs. Marcus Whiffen's *American Architecture Since 1780: A Guide to the Styles* (The M.I.T Press, Cambridge, Mass., 1969) provides a standard guide to American architectural styles and may be consulted when questions of terminology arise. If local terms or styles are used, they should be accompanied by a description or explanation.

It is appropriate to include the following types of information in descriptions of buildings, structures, and objects:

1. Type of building (dwelling, church, store, mill, etc.)
2. Building placement (detached, row, etc.)
3. General characteristics:
 - Overall shape or plan (rectangle, ell, etc.)
 - Number of stories
 - Number of vertical divisions or bays
 - Construction materials (brick, frame, masonry, etc.) and wall finish (kind of bond, coursing, shingle, etc.)
 - Roof shape (gabled, hipped, shed, etc.)
4. Specific features, including location, number, and appearance of:
 - porches (verandas, stoops, attached sheds, etc.)
 - windows
 - doors
 - chimneys
 - dormers
5. Decorative elements
6. Major interior features contributing to the significance of the building:
 - stairs
 - Interior trim, including mantles and wall coverings
 - hardware
 - floors
 - lighting fixtures
7. Number, type, and location of outbuildings, as well as dates, if known
8. Other manmade elements (roadways, contemporary structures, landscaping) included within the nominated area.

Rural In addition to the information listed above include:

1. General description of geography and topographical features (valleys, bodies of water, soil conditions, climate, changes in elevation, vistas, etc.) that convey a sense of cohesiveness; and/or
2. General description of the outbuildings and other examples of vernacular rural architecture within district boundaries.

Site (historic)

The present condition of a historic site and its environment should be described. The overall integrity of the site—the degree to which the setting is a visual reminder of the events and activities that took place there—should also be thoroughly discussed in the nomination.

Condition

Check the blank or blanks that best describe the present condition of the resource.

Unaltered/Altered

The conditions *altered* and *unaltered* refer to the present state of the property as compared to its condition *at the time it achieved significance*. Alterations can include: an addition; a change of exterior or interior materials; and/or the replacement of original windows, doors, ornamentation, or structural elements. A restoration is considered an alteration if original fabric has to be removed and replaced. Normal weathering ordinarily does not constitute an alteration.

Known alterations should be described in the written statement of appearance with dates documented or estimated. Where numerous alterations have occurred, it would be helpful to include a floor plan or sketch with additions clearly marked and dated.

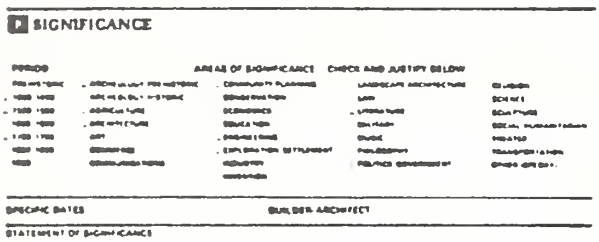
Moved or Original Site

Check the appropriate blank.
If a property has been moved, the following information should be given in the description wherever possible:

1. Date of move
2. Original location and description
3. Distance the property has been moved
4. Explanation of the effect of the move on the historical integrity of the property and upon its new location
5. Reasons for the move.

Significance

FOR INFORMATION ONLY


SIGNIFICANCE

PERIOD — AREAS OF SIGNIFICANCE — CHECK AND JUSTIFY BELOW

SPECIFIC DATES — BUILDER/ARCHITECT

STATEMENT OF SIGNIFICANCE

The statement of significance should convey, in concise terms, why the nominated property deserves to be included in the National Register. An opening paragraph summarizing the importance of the property being nominated should be followed by a more detailed account of the events, personalities, prehistoric or historic occupations, or activities that contribute to the property's significance.

Nominations for properties that are less than 50 years old; moved; reconstructed; cemeteries and grave sites; birthplaces; primarily commemorative in nature; or owned or used by religious institutions will not be accepted unless the statements of significance discuss the specific exceptions set forth in the National Register criteria. These exceptions should be specifically addressed in a summarizing paragraph.

Discussion of family geneology, a list of past owners, or a general history of the town where the property is are less important than a clear statement of why the particular property is worthy of preservation. The statement of significance should address itself to the significance of *the particular resource being nominated* as it now exists; it should relate to a broad historical, architectural, archeological, or cultural context on a local, regional, State, or national level.

Additional facts should be included where relevant, such as: period of construction or use, historically significant events, data concerning individuals associated with the property, and data that the property has yielded or may likely yield. Supplemental information, such as newspaper articles or letters from professional architects, architectural historians, or archeologists may also be submitted as appropriate. Any quoted material that appears in this section should be footnoted. Quotations taken out of context should faithfully represent the meaning of the original source.

Checking Statements of Significance

Statements of significance should be able to answer the following questions, which are listed in three broad categories. These questions may be used as a checklist to help ensure that the property being nominated meets National Register criteria and that the statement of significance contains sufficient information for review by the National Park Service.

Information on preparing statements of significance for archeological sites and districts may be found in Appendix II.

Building, Structure, Object

1. If a building or structure is nominated for its significance in architecture, does it retain enough of its significant design, aspect, or feeling to be recognizable? Could the important elements of design or appearance be restored?
2. How have alterations or additions contributed to, or detracted from, the significance of the property?
3. If the building, structure, or object is nominated for historical significance, does the existing building have an identifiable relationship to the history described? Does it retain sufficient integrity to convey the feeling of the historical period when it achieved significance?
4. Are there other properties in the vicinity which also have strong associations with the individual?
5. Are significant individuals associated with the building, structure, or object, and if so, how long did they live there, how long were they associated with the building, and during what period of their lives?
6. What was the building or structure used for during the period it achieved historical significance?
7. If the building, structure, or object is no longer at the original location, are the reasons for the move fully explained? How does the new location affect the historical and architectural integrity of the building or structure?
8. Does the building, structure, or object have an unusually important association with its location?
9. How does the building, structure, or object compare with similar resources in the State, region, or locality?

Site (historic)

1. How does the site relate to the significant event, occupation, or activity that took place there?
2. How have alterations (destruction of original buildings, change in land use, changes in foliage or topography) affected the integrity of the site?

USDA-FOREST SERVICE

SPECIAL PROJECT ADAPTATION OF FORM
ARCHEOLOGICAL AND HISTORICAL SITE INVENTORY

Instructions in "Cultural Resources Automated Information System"

(Ref: FSM 2361.7)

PROJECT NAME: **fire tower thematic nomination**

FORM COMPLETED BY: _____

TOWNSHIP T [][] [] N/S — RANGE R [][] [] E/W — SECTION [][]
(3 4 5 6 7 8 9 10 11 12 13)

Locational and CRM Information (Card #1) [1]

1/4 1/4 1/4

Forest _____ [][] (14 15)

District _____ [][] (16 17)

State _____ [][] (18 19)

County _____ [][][] (20 21 22)

Universal Transverse Mercator Location — ZONE [][] (23 24) - NORTHING [][][][] (25 26 27 28) - EASTING [][][][][][] (29 30 31 32 33 34 35 36 37)

USFS Site Number [][][][][] (38 39 40 41 42)

Other names and/or numbers: _____

HISTORIC NAME _____ initial

RIM Number (Class 1 Sites): [][][][][][][] (43 44 45 46 47 48 49)

Site Evaluation (FSM 2361.1) By Professional Cultural Resource Specialist Only. [] (50) Map/Aerial _____ Photo _____

Site Condition [] (51) Percent of Disturbance [][][] (52 53 54)

Site File Check [Y] (55) Collection Made [0 0] (56 57) Collection Type [N] (58) Site Marked on Ground [A] (59) Hours Expended on Site [][] (61)

Cultural Resources Report Number: YEAR [][][][] (62 63 64 65) FOREST [][] (66 67) NUMBER [][][] (68 69 70)

Date Site Inventoried: MONTH [][] (71 72) DAY [][] (73 74) YEAR [][][][] (75 76 77 78)

Recorded By: [9 9] (79 80)

Environmental and Site Descriptive Information (Card #2) [2] (1)

Vegetation of Site Area: Reg. Fm. [][] (2 3) Series [][] (4 5) Association [][][] (6 7 8)

Soils: Great Group [][][][][] (9 10 11 12 13) Subgroup [][][][] (14 15 16 17) Depth(in cm) [][][] (18 19 20)

LANDFORM OF AREA [][] (21 22)

ON SITE TOPOGRAPHY N [] (23) E [] (24) S [] (25) W [] (26)

ASPECT OF SITE [][] (27 28)

AVERAGE SLOPE (IN DEGREES) [][] (29 30)

ELEVATION (IN FEET) [][][][][] (31 32 33 34 35)

Nearest Water: TYPE [][] (36 37) DIRECTION [][] (38 39) DISTANCE (IN KM) [][] . [][] (40 41 42 43)

Nearest Agricultural Land: TYPE [][] (44 45) DIRECTION [][] (46 47) DISTANCE (IN KM) [][] . [][] (48 49 50 51)

CONTINUED _____

R3-2300-2 (6/80)

Environmental and Site Descriptive Information (Card #2)-Continued

Site Description: CLASS [B] (82) USE [H] (83) TYPE [0][2][9] (84 85 86)

Site Size — CORE AREA [][][][][][] (87 88 89 90 91 92) DISPERSED AREA [][][][][][] (93 94 95 96 97 98) IN SQUARE METERS

Dimensions: Length _____ m. Height _____ m. Width _____ m. Depth _____ m.

ARTIFACTS OBSERVED: Flaked Stone [] (69) Ground Stone [] (70) Ceramics [] (71)

Bone [] (72) Shell [] (73) Other Prehist. [] (74) Hist. Ceramics [] (75)

Glass [] (76) Cans [] (77) Other Metal [] (78) Other Historic [] (79) Construction Material(s) [Z] (80)

Site Specific Information (Card #3) [3] (1)

Range of Site Occupation in Years B.P. (1950) [][][][][] (2 3 4 5 6) to [][][][][] (7 8 9 10 11)

Date Based On: [S] (12) USDA - Records

FEATURES: Subsurface Rooms [][][] (13 14 15) Surface Rooms [][][] (16 17 18)

Non-room Walls [] (19) Partial Shelters [] (20) Middens [][] (21 22) Hearth [][] (23 24)

Storage Cist. [][] (25 26) Roasting Pit [][] (27 28) Bounded, Non-Roofed Area [] (29) Modified Cave [][][] (30 31 32)

Large Depression [] (33) Water/Soil Control [][] (34 35) Mound, Non-Midden [] (36)

Bedrock Grinding [] (37) Quarry/Mine [] (38) Buildings [][][] (39 40 41) Rock Art [] (42)

Miscellaneous Features [][] (43 44)

ARTIFACTS/MATERIAL COLLECTED: Flaked Stone [] (45) Ground Stone [] (46)

Ceramics [] (47) Bone [] (48) Shell [] (49) Other Prehist. [] (50) Hist. Ceramics [] (51)

Glass [] (52) Cans [] (53) Other Metal [] (54) Other Historic [] (55) Soil Sample [] (56)

Pollen [] (57) Floatation [] (58) Charcoal [] (59) Veg. Samples [] (60)

Multi Components: [] (61)

CULTURAL CLASSIFICATION:

[H][I][S][T][][A][N][G][L][O][][H][I][S][T][O][R][I][C] (62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80)

PAGE 2

NOTE: Changes in construction materials from the original can affect the historic value of a property. On a separate sheet, list your observations about materials (roofing, siding, foundations, etc.).

APPENDIX C

This section reproduces portions of a 1932 Forest Service "instruction" which is no longer widely available. It was issued as "Instructions & Specifications for Protection Against Lightning" by the Chief's Office. A typed note, added to the cover, states that all Forest Service buildings on exposed high points should be provided with lighting protection.

The purpose in reprinting the material here is to show an interesting sub-set of lookout site technology. Also, this is a convenient way to further illustrate some of the variety of structures used in the first generations of the program.

Illustrations include not only towers and ground houses, but also trees, tents and other structures little noted earlier in this book. The text was not type set, although the cover was. Text and captions were simply typed and reproduced rather crudely. Editing here has been limited to selection of pages which seem most interesting without attempting to improve upon the original presentation.

Much of the original 48 pages consisted of Material Lists. These all appear inherently less interesting, today, than are the diagrams and instructions and so none are reproduced for this book. Also not show here are the numerous detail sheets which show how to mount switches and complete wired circuits. The original, from which the following pages are reproduced, is in the library of the Forest Service Historian in Washington.

INSTRUCTIONS & SPECIFICATIONS

for

PROTECTION AGAINST LIGHTNING

of

Lookout Houses, Towers
and
Other Structures On Exposed Points

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
1932

Editor's Note: Pages 1 and 2 were missing from the copy used to make this Appendix.

(7) Air Terminals. Separate points are not required. On buildings with metal roofs air terminals will not be provided, excepting on chimneys, and not on chimneys if they are of metal. On buildings with roofs of other materials the rods will be of copper at least 5/8 inch in diameter, or its equivalent in conductively. On peaked roofs such as on top of lookout towers, one terminal extending one foot above the peak will be sufficient. On ridged roofs, as on smaller cabins, two points each two and a half feet above the highest point on the roof will be provided. On flat roofs the rods should be five feet high. All terminals should be connected together at the roof line and in electrical contact with all the grounded conductors. Terminals should never be more than 25 feet apart and each will have at least two - usually more - paths to the ground. Braces, for air terminals which exceed 12 inches in height, will be provided and will be of material equivalent in strength and stiffness to one-fourth inch round iron, and resistant to corrosion.

(8) Conductors will be of copper with a minimum weight of 187.5 pounds per thousand feet. The form of the material is of no consequence, except that cables should not include wires smaller than No. 17 A. C. W. Where conductors already installed are of heavily galvanized steel weighing not less than 320 pounds per thousand feet with wires not smaller than No. 14 steel wire gauge in cables, no change need be made. No. 2 B&S gauge copper wire weighs 199 pounds per thousand feet. 00 gauge iron galvanized weighs 353 pounds per thousand feet. Soft copper wire is more easily worked into place than are the stiffer forms. This should be borne in mind when ordering this material.

(9) Down Conductors shall be connected to the edges of metal roofs or to the lower edges of metal siding by soldered or bolted joints having an area of contact of at least 3 square inches.

(10) The Conductor shall run as directly as possible to the ground. Where bends are absolutely unavoidable, they should have a radius of at least eight inches and no angle in excess of 90 degrees.

(11) Lightning rods and Conductors will not be insulated at points of contact with structures.

(12) Place terminals and conductors where lightning is liable to go. Do not try to lead it.

(13) To prevent side flashes, all larger metal parts composing, within or adjacent to, a structure will be connected with conductors.

(14) Where the conductor enters the ground, it should be protected by a wooden box from injury by passing stock.

(15) Ground Conductors are the most important part of the system. One must be provided for each down conductor. As the soil is usually rocky on lookout points, thus making it difficult to bury a ground to a depth of at least ten feet as it should be, it will be the practice to use the trench type of ground connection. This calls for a narrow trench dug diagonally away from each corner of the building and the lower end of each conductor (without a cone) laid straight in it to a length of 12 feet and buried three feet deep. Or, if rocks are encountered, less depth and greater length is called for. If the location is on bare surface rock only, conductors 80 to 100 feet long laid on the surface and weighted down with stones would be sufficient. If in addition some (200 square feet of) spread out chicken wire netting, interwoven telephone wire or other similar material is connected to the end of each ground wire and weighted down with rocks, additional protection will be provided. The more extensive the underground metal available, the more effective the protection. All the ground connections should be connected together by a conductor buried in a trench surrounding the building. (see diagram) Four grounds at opposite ends of the structure will be provided. Water system pipes are excellent for grounding purposes. The use of charcoal about the ground wires is a practice of questionable necessity, according to the Bureau of Standards. Accordingly, it will be followed only in exceptional cases, if at all. In very dry ground salt will help to lower resistance, but is not essential if the above grounding standards are met.

(16) Stoves and other large metal in guard cabins will be insulated or grounded by connecting to nearest lightning conductor, as shown in the diagram, also by a single rod through the cabin floors, if there is soil into which it may be driven.

(16a) Metal cots should be protected by a connection to a ground conductor when one passes near it. (B. of S. letter 2/20/32)

(17) Joints should be few in number and mechanically strong. The contact area will be not less than double the conducting cross-sectional area of the conductor, usually much more.

(18) The telephone pole nearest to each cabin and station will be provided with a lightning wire.

(19) All parts of the system including terminals, conductors, metal roofing, metal chimneys, rain spouts, steel towers, ground connections, etc., must be electrically connected together by bolts, rivets, overlapping contacts, solder, or braiding as outlined above.

(20) All exposed cabins will have lumber floors.

(21) Do not join together metals of different kinds where it can be reasonably avoided, as the electrolytic corrosion will wear out the connections. Where such connections are necessary they should be soldered or kept painted with aluminum paint.

(22) All fasteners should be of the same material as is the conductor or of such nature that there will be little electrolytic corrosion. Copper staples on copper fasteners for attaching conductors to steel frames should, if practicable, be used. Fastenings must be tight and not more than four feet apart.

(23) Flagpoles, unless rodded with a single conductor, will not be erected on exposed points.

(24) Telephone, radio, and similar wires at the point they enter buildings should be separated from the lightning conductors by at least six feet if at all possible. Since this will not be possible in most cabins, cut-off switches at the nearest pole should be provided, together with discharge gap, as shown in telephone diagrams, No. 62, pages 8 and 9, for grounded circuit lines, and diagram No. 63, pages 10-11, for metallic circuit lines and used as specified in the local fire plans.

(25) If it is desired to obtain a greater degree of safety than would be obtained by simply rodding the house, a single rodded pole erected to conform with the rule expressed in the second sentence of Par. (6) hereof may be installed. The Bureau of Standards, however, believes that the simple cage system, as shown in the attached diagrams, properly grounded and connected to the metal above the building is sufficient.

(26) The use of coal oil stoves during thunderstorm weather is recommended, since they do not produce a column of conducting gases from a chimney. A set of rules covering the safety of observers during thunderstorms will be posted in each lookout point. The following are recommended:

(a) Do not go out doors or remain out during thunderstorms unless it is necessary. Stay inside of a building where it is dry, preferably near the center of the room.

(b) If there is any choice of shelter, choose in the following order:
Large metal or metal-frame buildings.
Dwellings or other buildings which are protected against lightning.
Large unprotected buildings.
Small unprotected buildings.

(c) During thunderstorms avoid the immediate vicinity of:
Electric light circuits.
Lightning conductors and downspouts.
Metal objects projecting through the walls or roof of the building.
Screened doors and windows.
Stoves and fireplaces.
Telephones.

(d) If remaining out of doors is unavoidable, keep away from:

Small sheds and shelters if in an exposed location.
Isolated trees.
Wire fences.
Hill tops and wide open spaces.
Seek the protection of dense woods, a grove of trees, a cave, a depression in the ground, a deep valley or canyon or the foot of a steep or overhanging cliff, if there are any.

The main point is stay inside of the lightning protection cage and keep out of contact with wire or metal parts.

In order to help insure a correct interpretation of these instructions by men in the field, the following plans and specifications have been prepared, describing in detail the installations necessary to provide lightning protection for the various types of Forest Service buildings. These plans and specifications comply with the instructions above referred to, and, excepting parenthesized items, will be standard for the Forest Service.

The following supplemental instructions have been approved by the Bureau of Standards in their letter of February 20, 1932:

Towers with balcony. If balcony is not over the approved width (approx. 3 feet), a conductor on the balcony rail is not required.

Window shutters, on cabins or towers. No special protection is necessary, but shutters should not be made of metal, or raised above the horizontal, or braced with metal braces.

Form No. 901

U. S. DEPARTMENT OF AGRICULTURE
Forest Service

SAFETY FIRST

INSTRUCTIONS FOR USE OF TELEPHONE AND DISCONNECT SWITCH
DURING AN ELECTRICAL STORM

AT ALL LOOKOUT HOUSES AND TOWERS AND OTHER BUILDINGS ON EXPOSED POINTS

1. When the storm is a mile or more away.

 If necessary to use the telephone, always:

 A. Stand on the insulated stool.

 B. Do not hold receiver tight against ear.

 C. Do not touch any metal part of telephone or building.

2. When the storm is less than a mile away:

 A. Throw disconnect-grounding switch.

 B. Stay away from the telephone; remain in the building, as far as possible from a window or door or any metal object, lightning conductor, etc.

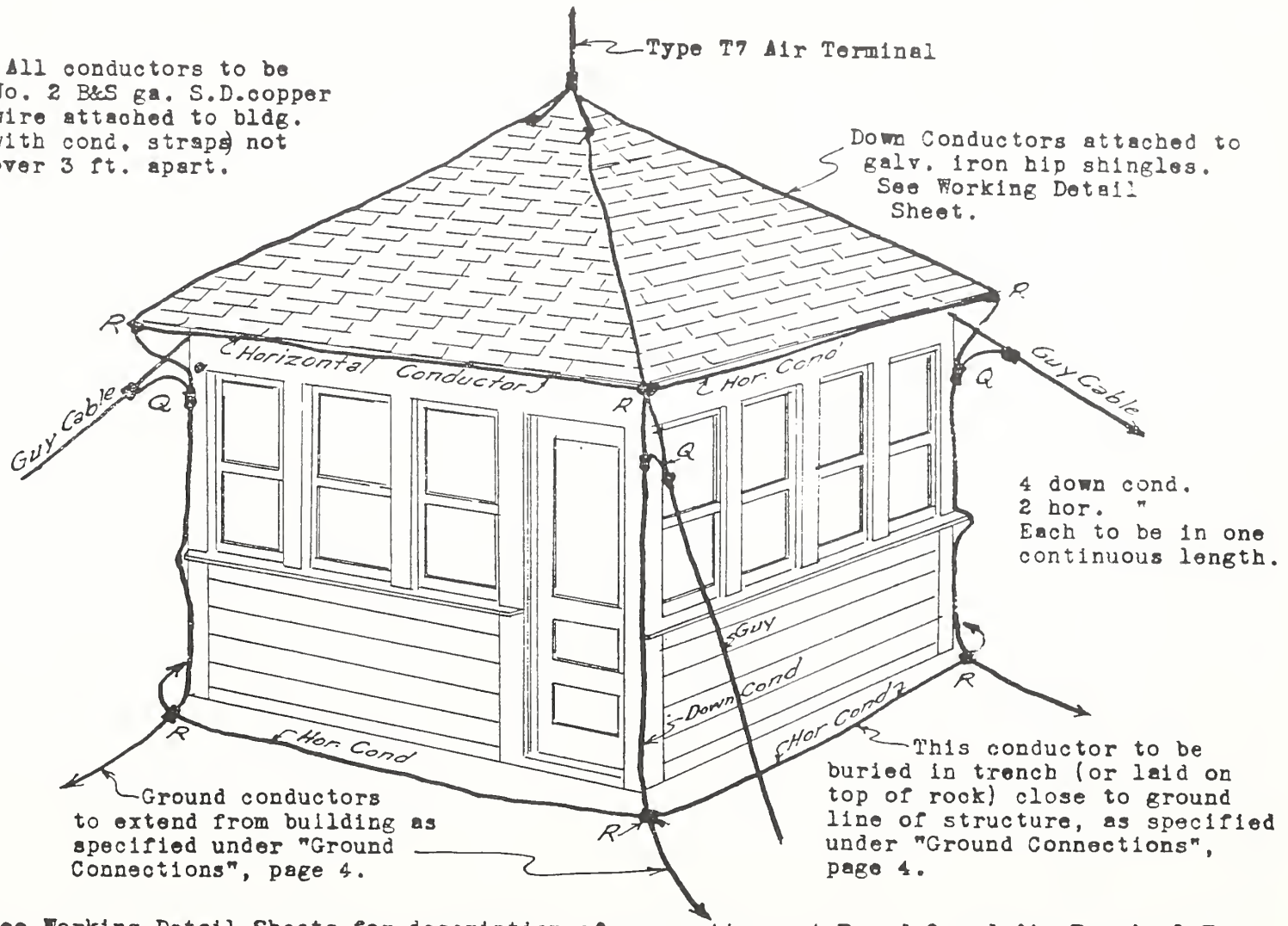
NOTE: The above instructions are for stations having standard lightning protection, 1932, or equivalent, for both building and telephone installation, including a Type "B" lightning arrester. This arrester consists of a discharge gap and combined disconnect grounding switch. The switch, when thrown, disconnects the telephone lead-in wire from the line, and grounds the lead-in-wire.

These simple but desirable precautions must be rigidly adhered to by all persons occupying Forest Service lookout houses and towers. To disregard them invites possible injury to the person.

U. S. FOREST SERVICE.

(This form should be posted near all telephones.) in exposed structures.

PROTECTION AGAINST LIGHTNING
HIPROOF TYPE LOOKOUT HOUSE

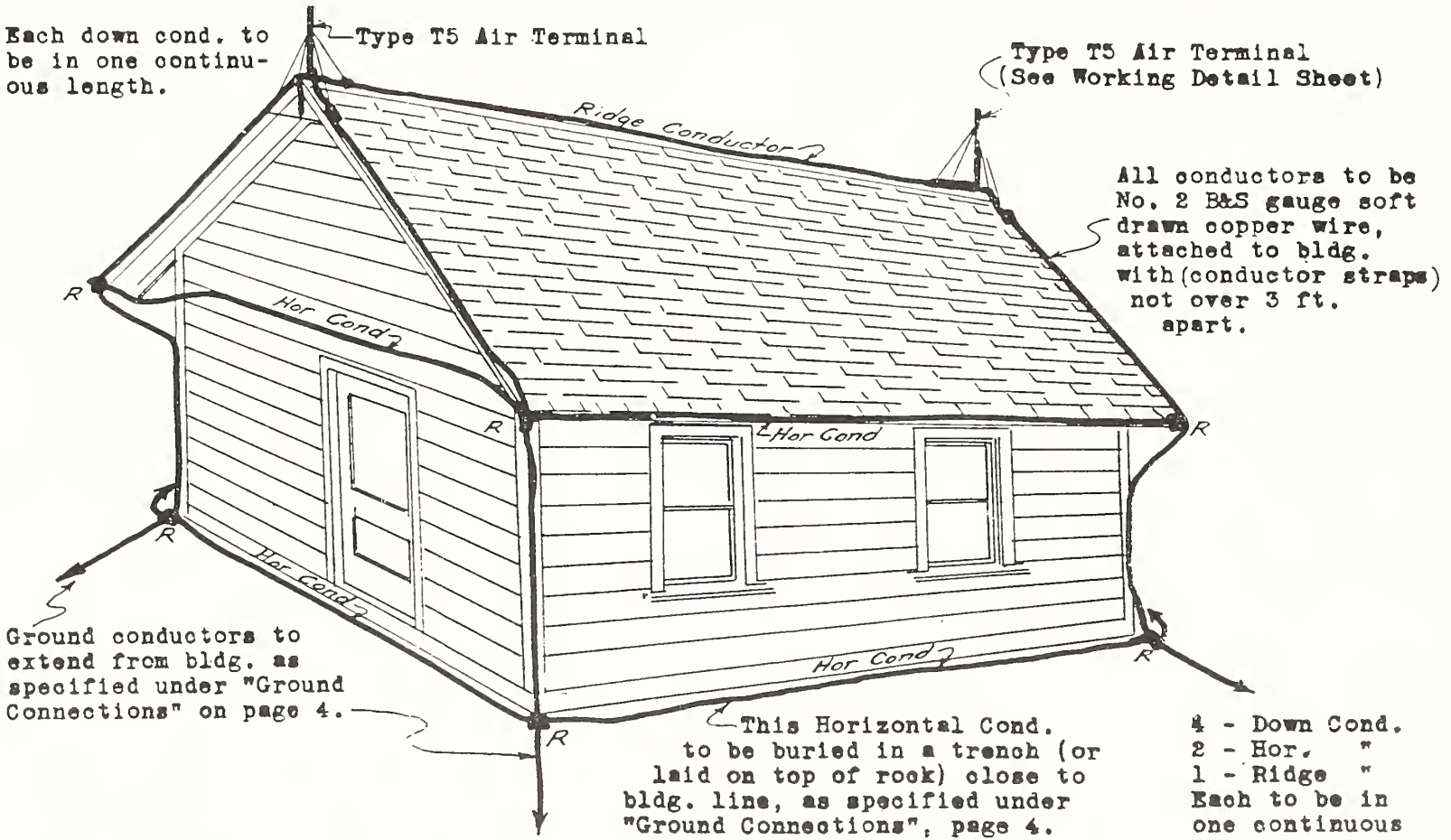


See Working Detail Sheets for description of connections at R and Q and Air Terminal, T-7.

C.M.A. K.E.B. 1932

PROTECTION AGAINST LIGHTNING

BUILDINGS WITH GABLE ROOFS

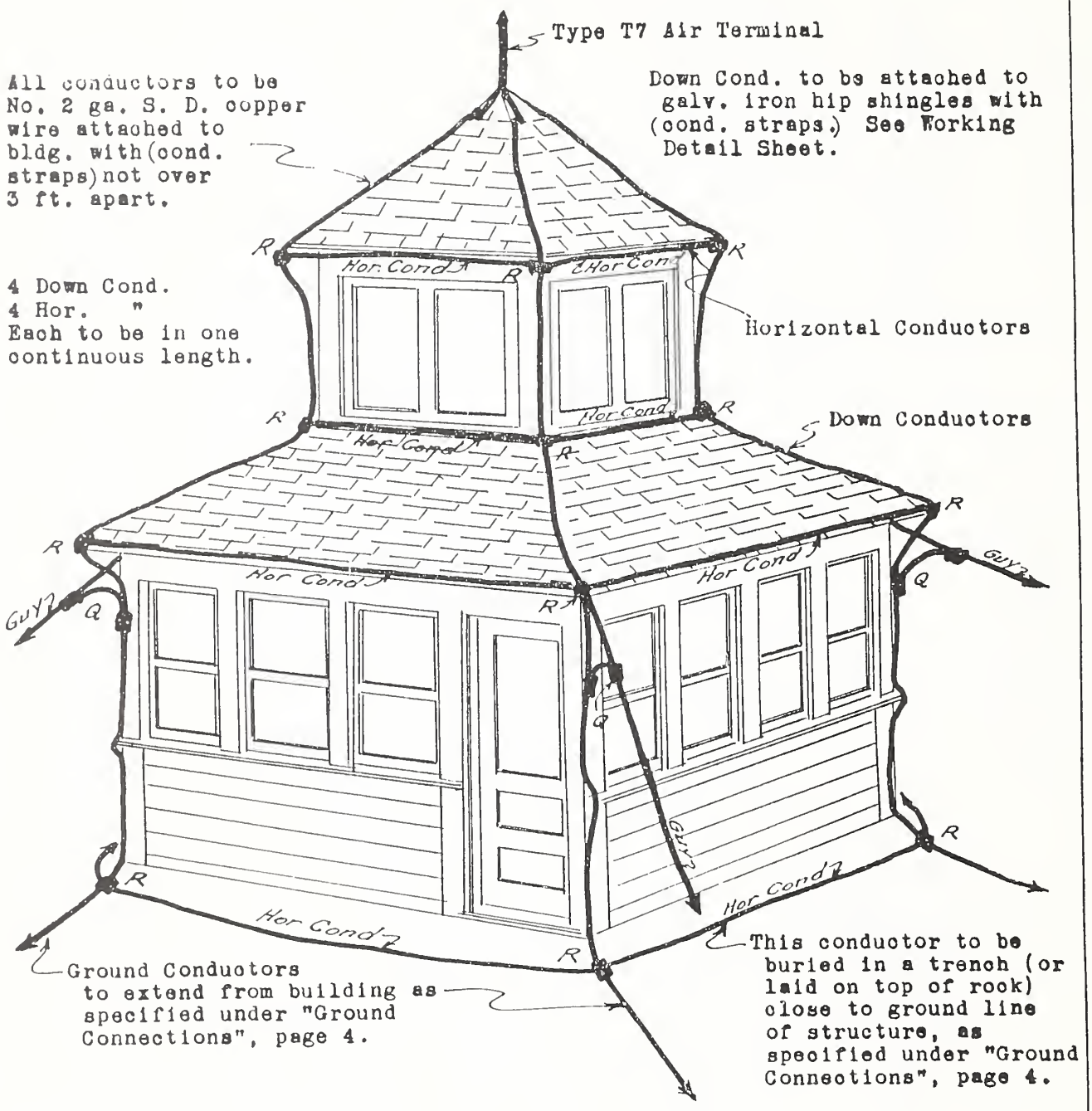


See Working Detail Sheets for description of Air Terminal and R connections.
See Material List "A" for building with guys and List "B" for building without guys.
When guys are used, connect guys to down conductors with "Q" connections.

C.M.A. K.E.B. 1932

PROTECTION AGAINST LIGHTNING

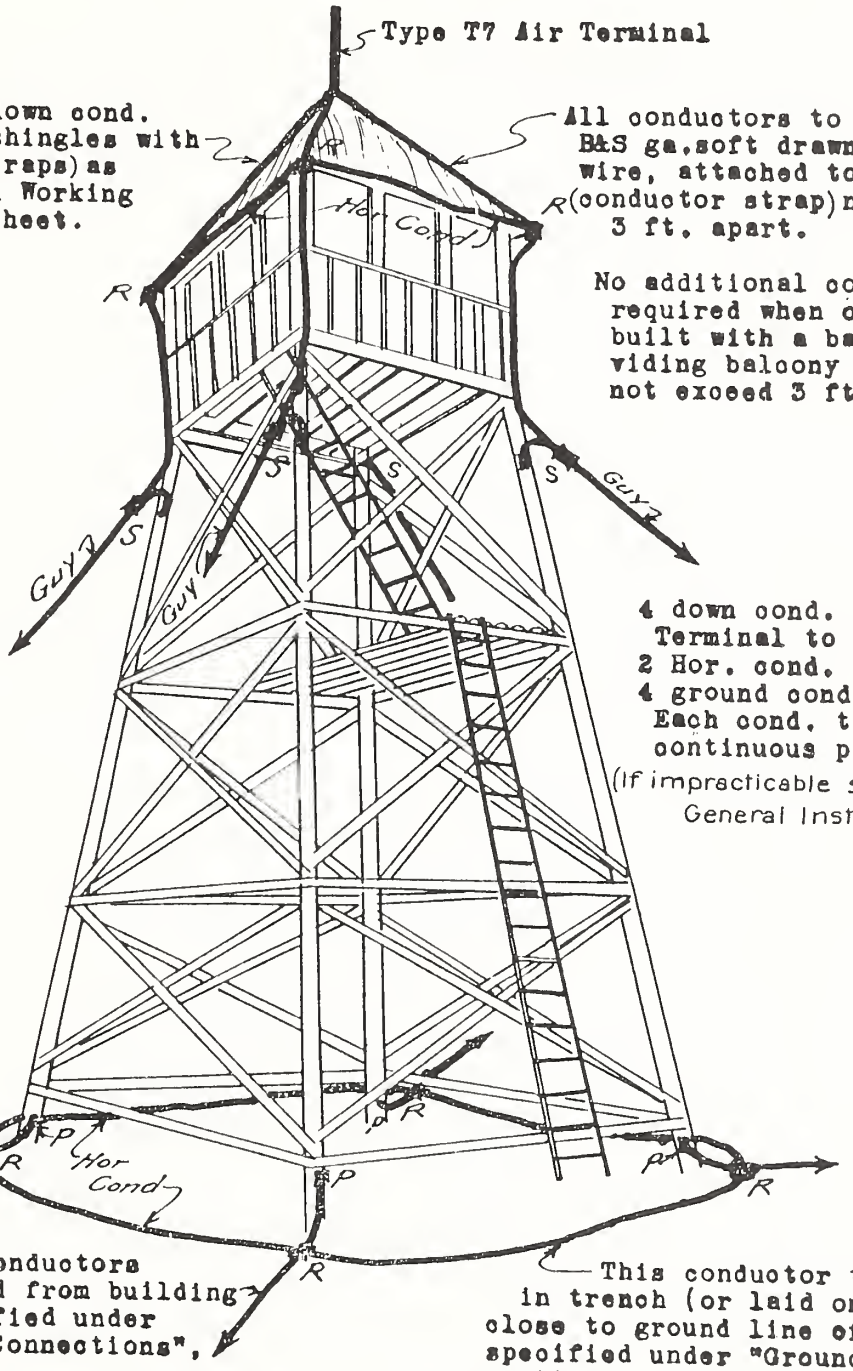
R-6 LOOKOUT HOUSE



See Working Detail Sheets for description of connections at R, Q, and at Air Terminal T7.

PROTECTION AGAINST LIGHTNING

STEEL TOWERS WITH WOODEN INCLOSED OBSERVATORIES

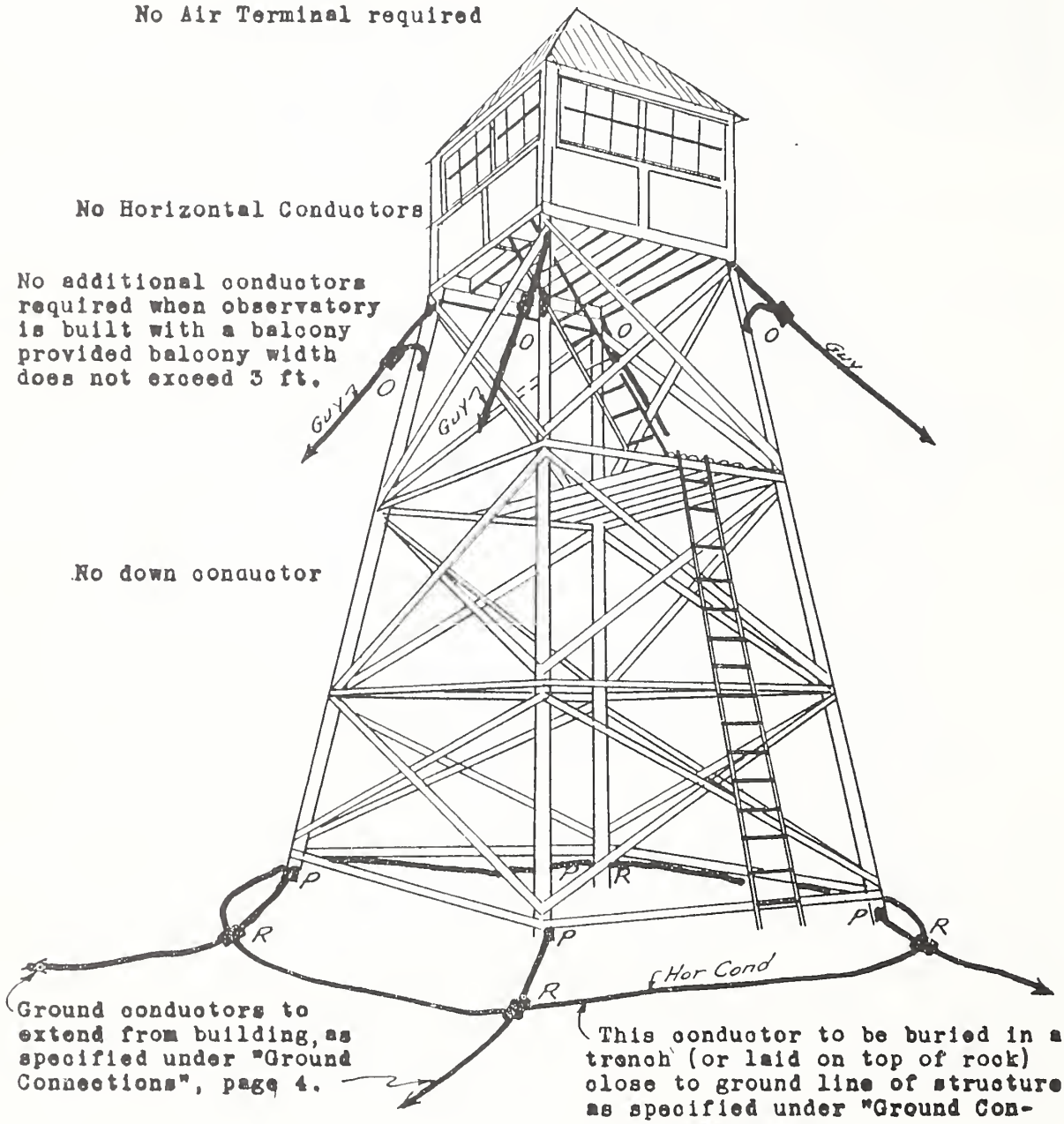


See Working Detail Sheets for description of S, R, P, and Air Terminal connections, T7.

C.M.A. 26 K.E.B. 1932

PROTECTION AGAINST LIGHTNING

STEEL TOWERS WITH STEEL INCLOSED OBSERVATORIES

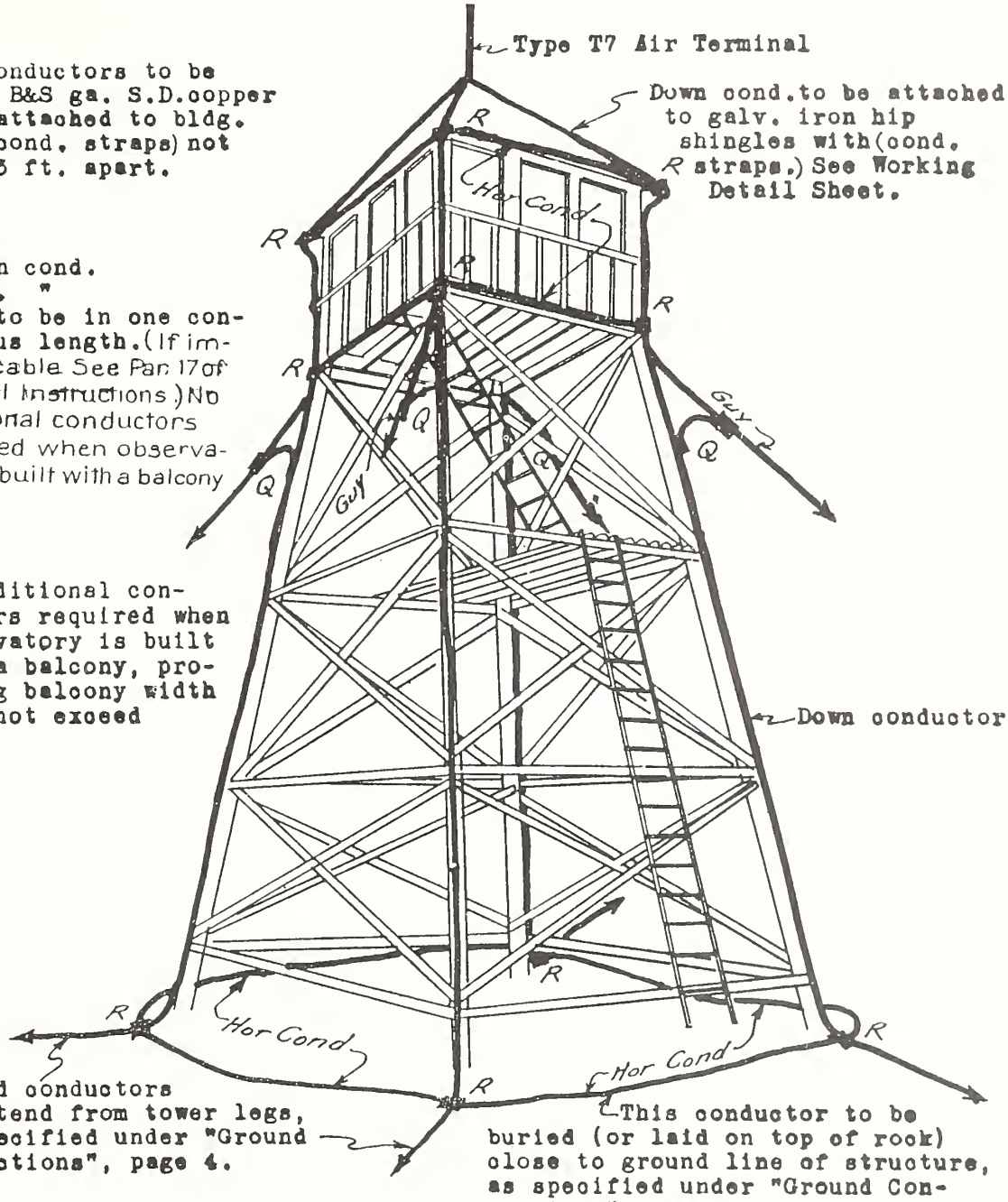


See Working Detail Sheets for description of connections R, O, P.

C.M.A. 27 K.E.B. 1932

PROTECTION AGAINST LIGHTNING

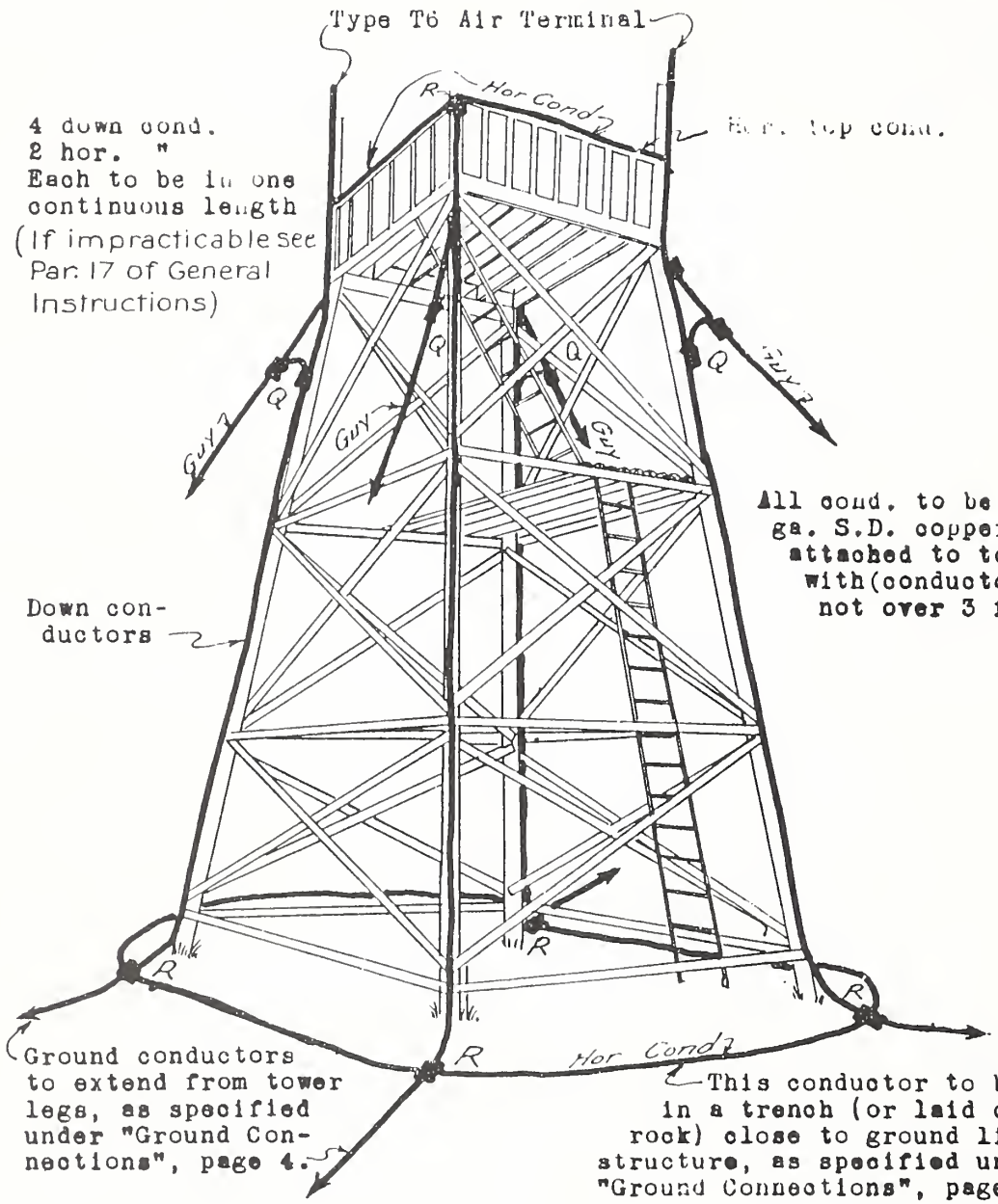
WOOD TOWER WITH WOODEN INCLOSED OBSERVATORIES



See Working Detail Sheets for description of connections at R-Q, and Air Terminal T7.

PROTECTION AGAINST LIGHTNING

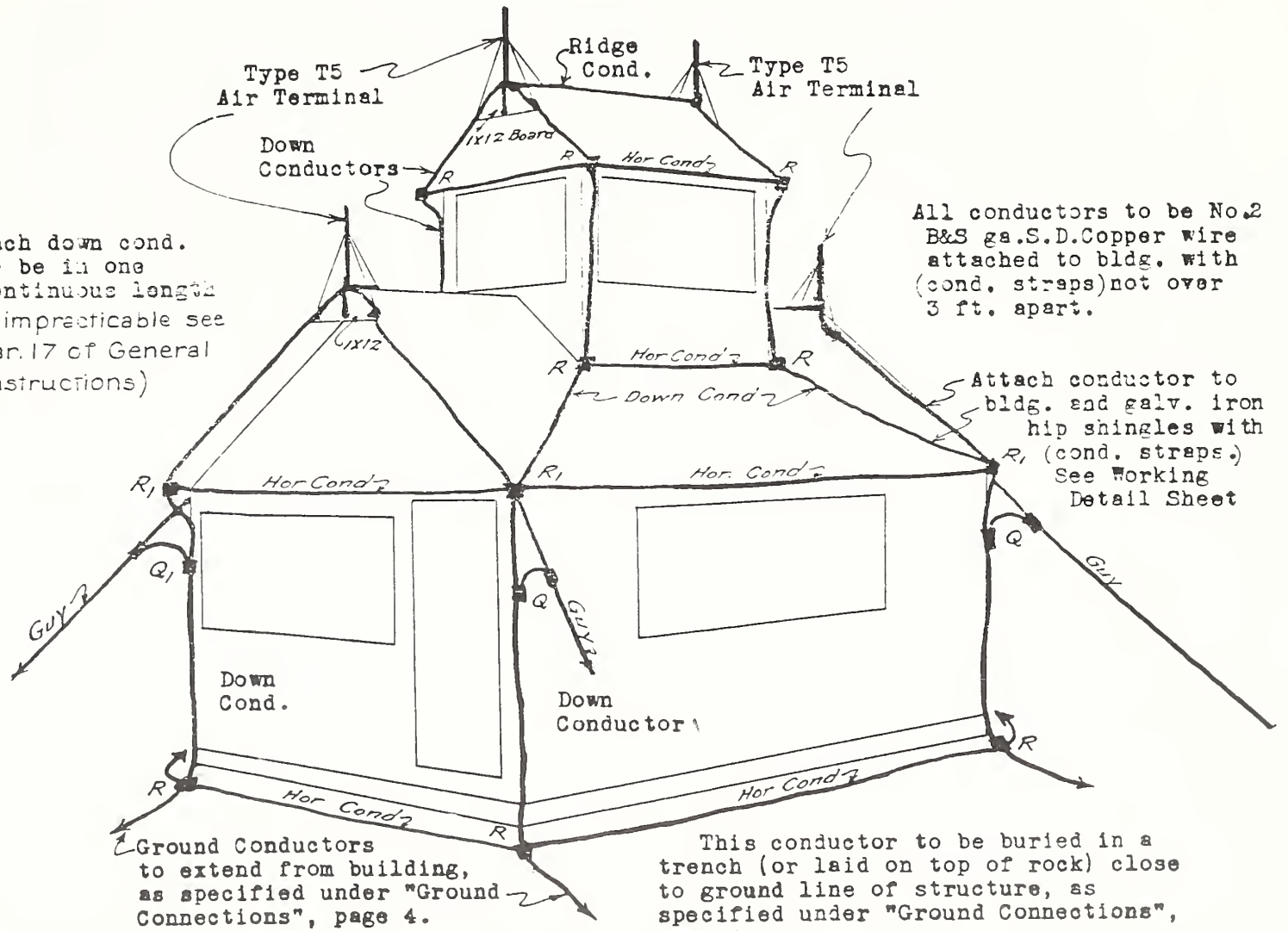
WOOD TOWERS WITHOUT INCLOSED OBSERVATORIES



See Working Detail Sheets for description of connections at R, Q, and Air Terminals, T6.

PROTECTION AGAINST LIGHTNING

R-1 TYPE LOOKOUT HOUSE WITH CUPELO



See Working Detail Sheets for description of connections at Q, R and R1 and Air Terminal, T5.

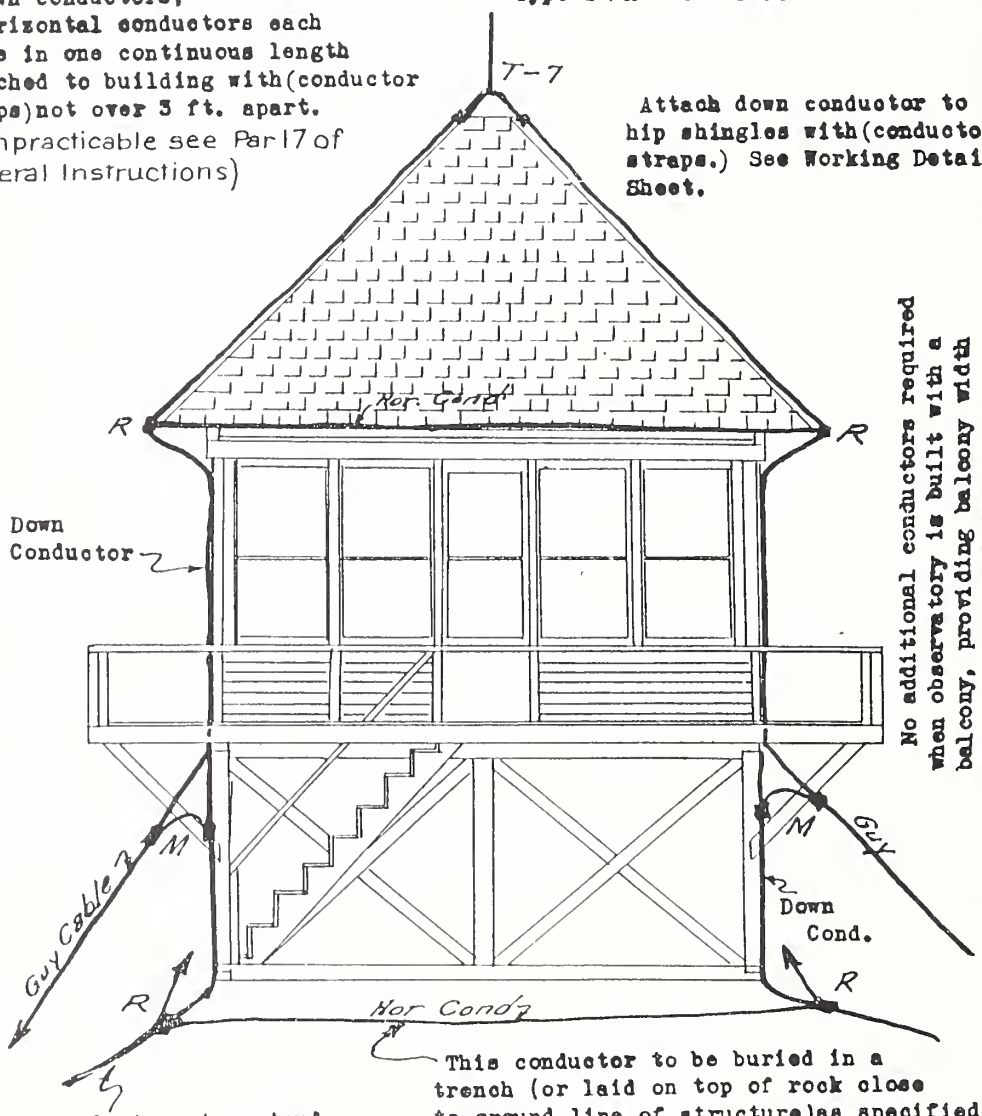
C.M.A.

K.E.B. 1932

PROTECTION AGAINST LIGHTNING
Wood Lookout House on Raised Foundation
With Hip Roof and [redacted]
or without Balcony

All conductors to be
No. 2 B & S ga. copper wire.
4 down conductors,
3 horizontal conductors each
to be in one continuous length
attached to building with(conductor
straps)not over 3 ft. apart.
(If impracticable see Par 17 of
General Instructions)

Type T-7 Air Terminal



Attach down conductor to hip shingles with(conductor straps.) See Working Detail Sheet.

No additional conductors required when observatory is built with a balcony, providing balcony width does not exceed 3 feet.

This conductor to be buried in a trench (or laid on top of rock close to ground line of structure)as specified under "Ground Connections", page 4.

Ground conductors to extend from building as specified under "Ground Connections", page 4.

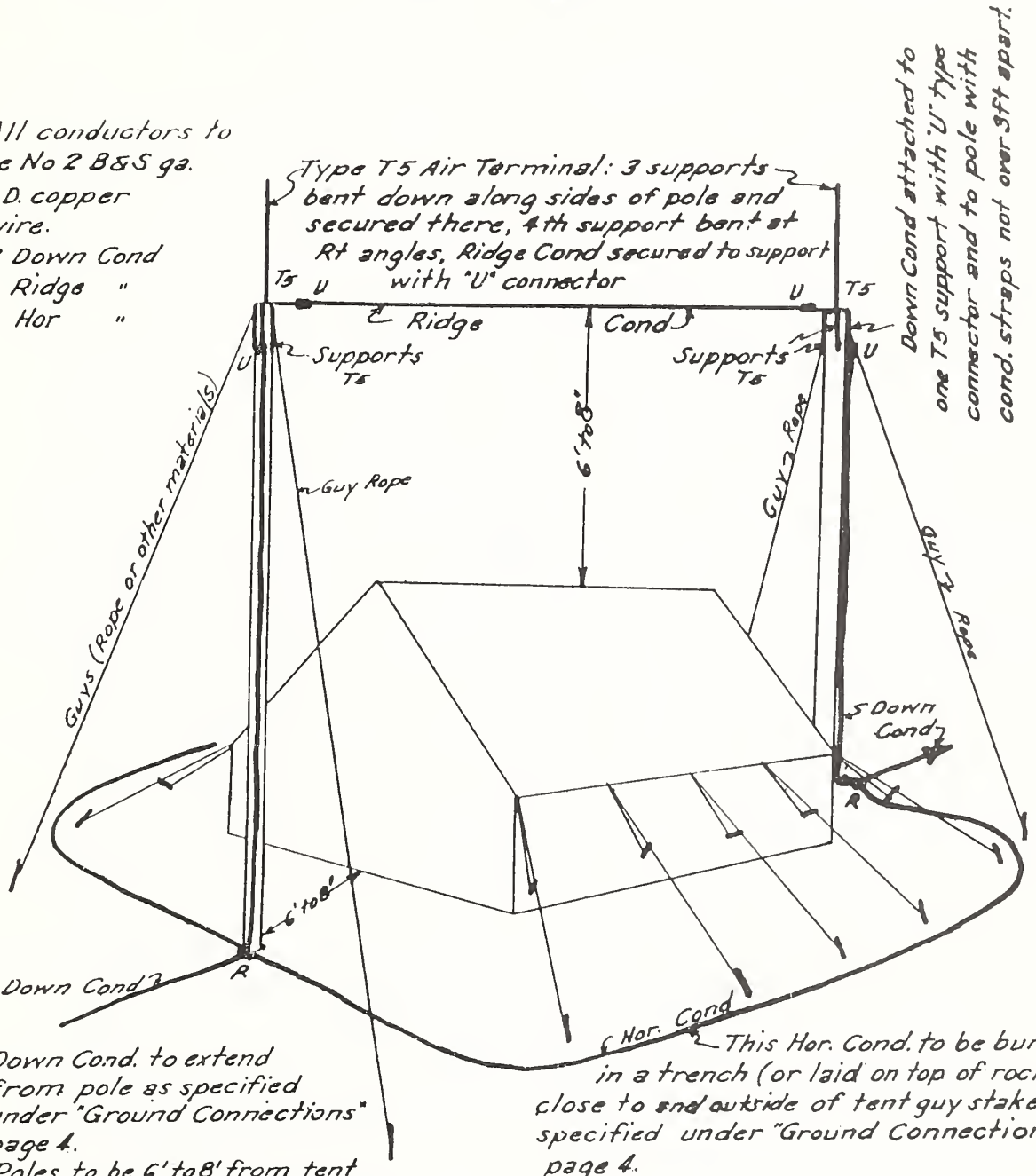
See Working Detail Sheets for description of connections at M and R and at Air Terminal T7.

March 1932 K.E.B.
C.M.A.M

PROTECTION AGAINST LIGHTNING

For all type tents

All conductors to be No 2 B&S ga. S.D. copper wire.
2 Down Cond
1 Ridge "
1 Hor "

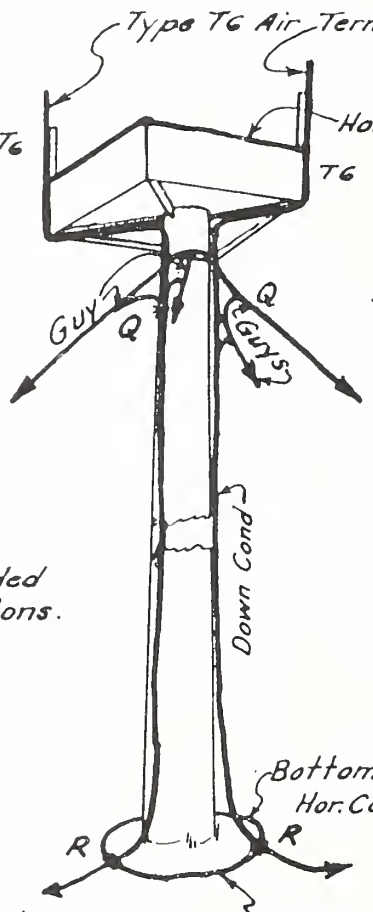


Down Cond. to extend from pole as specified under "Ground Connections" page 4.
Poles to be 6'to8' from tent and rises to carry Ridge Cond at least 6'to8' above ridge or peak of tent.

See Working Detail Sheets for description of connections at R. and at Air Terminals. T-5

PROTECTION AGAINST LIGHTNING

Pole or Tree Towers Without Inclosed Observatories



2 Down Cond
2 Hor. "
Each to be in one continuous length

All conductors to be No 2 B&S. ga S.D copper wire. Attach all cond. to tower with (Cond. Straps) not over 4 ft. apart.

When a lower set of guys are employed they are to be grounded to down cond. with "Q" connections.

Ground conductors to extend from building as specified under "Ground Connections" page 4

This Horizontal cond to be buried in trench (or laid on top of rock) close to base of tree or pole as specified under "Ground Connections" page 4

See Working Detail Sheets for description of connection at Q- R, and at Air Terminals. T-6

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The Forest Fire Fighters

The wind sweeps off the spire-like peak,
And is whirling the cinders high;
While down in the stifling, deadly reek,
We struggle, and all but die.

We have felled the trees in the fire's path,
Till our hands are bleeding and sore;
But always it speeds, with a hiss of wrath.
And leaps the barrier o'er.

We have fought it back, with blaze against blaze,
And yet has the foe slipped past;
But slowly we yield, in the choking haze,
Till the victory's won at last.

Small pay do we get, and thanks are gruff,
When we've fought the foe to his knees;
But after all, the reward's enough,
When we hear the wind in the trees.

Arthur Chapman 1920
The Forest Pioneer

The Lookout

'Way above the forests, that are in my care,
Watching for the curling smoke - looking everywhere,
Tied onto the world below by a telephone,
High, - and sometimes lonesome - living here alone.
Snow peaks on the skyline, woods and rocky ground,
The green of Alpine meadows circle me around,
Waves of mountain ranges like billows of the sea -
Seems like in the whole wide world there's not a soul but me.
Peering thru the drift smoke, sighting thru the haze,
Blinking at the lightning on the stormy days,
Here to guard the forest from the Red Wolf's tongue
I stay until they take me down, when the fall snows come.

Robin Adair 1927
California District News Letter
Vol. VIII (14): 1.
U.S.D.A.

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